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McMASTER UNIVERSITY
HAMILTON, ONTARIO

1982 HAMILTON-WENTWORTH COLLISION REPORT

PREPARED BY:
THE CITY OF HAMILTON TRAFFIC DEPARTMENT

1982 HAMILTON-WENTWORTH COLLISION REPORT

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1982 HAMILTON-WENTWORTH MOTOR VEHICLE COLLISION REPORT

Introduction

This annual report is a summary of factors associated with traffic collisions that occurred in the Regional Municipality of Hamilton-Wentworth in 1982.

Traffic collisions are a primary cause of accidental deaths (Appendix Exhibits A-1, A-2, and A-3), injuries and associated property losses. The intention of this report is to provide factual information to those agencies and persons concerned with the safety of the roadway transportation system within the Regional Municipality of Hamilton-Wentworth.

Traffic collisions frequently involve complex interactions between human behavior, vehicle characteristics, and the environment. The factor or factors responsible for causing a collision are not always the most obvious nor are they always readily apparent. Caution should be exercised in drawing conclusions from the statistics presented in this report and conclusions should be drawn only with appropriate qualifications and supportive information.

1982 HAMILTON-WENTWORTH COLLISION REPORT

Summary:

* In 1982, 7,663 reportable traffic collisions occurred on municipal roadways in the Region of Hamilton-Wentworth. These collisions resulted in:-

- 17 driver or passenger fatalities (9 motor vehicle drivers, 1 motorcyclist, 2 bicyclists and 5 riders or passengers)
- 10 pedestrian fatalities
- 3,752 driver or passenger injuries
- 396 pedestrian injuries
- 22,117 persons (equal to approximately 5 percent of the Regional population) being involved in a reportable traffic collision in 1982
- over 13 million dollars in property damages (as estimated at the time of the collision)
- 50 million dollars (estimated) in damages when all collision costs including medical costs, loss of income and other related costs are taken into account

* Historical measurements of the average rates of collision involvement for the period from 1951 - 1982 were found to be as follows:-

- 26.8 collisions per 1,000 population per year with no trend indicated (18.8 for 1982)
- 0.09 deaths per 1,000 population per year with no trend indicated (0.06 for 1982)
- 10.0 injuries per 1,000 population per year with an upward trend indicated from 1951 to present, but with no trend indicated from 1963 to present (10.3 for 1982)
- 1.7 pedestrian injuries per 1,000 population per year with a downward trend indicated (1.0 for 1982)

* The overall frequency of collisions in Hamilton-Wentworth is generally lower than other major Canadian municipalities.

* The overall frequency rates of fatalities in the City of Hamilton are generally lower than other Canadian and U.S. cities of similar population.

* The period from 12 midnight to 5 a.m. exhibits the highest ratio of collisions to vehicle volume using the street system.

* The greatest causes of traffic collisions were driver or pedestrian error; either errors in judgement or perception, or non-observance of traffic regulations.

* The predominant improper driver actions indicated in collisions were "following too close" and "failure to yield right-of-way".

* Drivers under 20 years of age were involved in a disproportionate number of collisions relative to the number of drivers in this age group that are licenced to drive. This age group was involved in 11.2 percent of the reported collisions although it comprises only 7.2 percent of the licenced driving population.

* The additional expense incurred by persons involved in traffic collisions in the Region in 1982 which could have been prevented had they been wearing their seatbelts is estimated to be in the order of $350,000 dollars.

* Twelve percent of reported collisions involved one or more drivers who had been drinking.

* Alcohol was associated with a high proportion of collisions (40 percent) which occurred in the hours between 10 p.m. and 3 a.m. from Wednesdays to Sundays and in night-time collisions (27 percent of collisions between 6 p.m. and 6 a.m.).

Note: These figures are indicative of alcohol being present in the bloodstream of one or more of the drivers involved in the collision and do not necessarily suggest that alcohol was the proximate cause of the collision.

* Non-licenced drivers were less likely to be driving properly, and more likely to be under the influence of alcohol or drugs when involved in a collision.

* Motorcycle operators were more likely to be driving properly at the time of the collision and more likely to receive injuries if involved in a traffic collision.

* Children between 5 and 9 years of age were involved in a disproportionate number of pedestrian collisions (26.8%) compared with their proportion of the regional population (7.2%). Pedestrians in this age group were most frequently involved in a collision as the result of entering the roadway unexpectedly; that is, running into the roadway or entering the roadway from behind a parked vehicle or object.

* Vehicle defects were reported in 1 percent of the vehicles involved in collisions. It should be noted that the presence of a recorded vehicle defect does not necessarily suggest that it was the proximate cause of the collision.

1982 COMPARED WITH PREVIOUS YEARS

A comparison of the collision statistics for 1982 with those for previous years indicates noticable differences in four areas as follows.

1. Overall Collisions

Eleven and one half percent fewer collisions occurred in 1982 than in 1981. The number of vehicle collisions occurring in the Regional Municipality of Hamilton-Wentworth was the lowest recorded for the Region (the Region was formed in 1974). Consistent with this reduction in collisions, the occurrence of injury collisions, property damage, persons injured and fatalities in the Region were all lower by between 11.5 percent and 17.3 percent compared to 1981. This reduction appears to be consistent with a province-wide trend (see appendix A-11).

2. Bicycle Injuries

The number of people injured in motor vehicle collisions while riding on a bicycle rose from 165 in 1981, to 254 in 1982. This is a fifty-four percent increase. For the years 1978, 1979 and 1980, by comparison, the number of cyclists involved in collisions was 167, 190 and 182 respectively. Increases in the number of collisions were noted for all age groups from ten years of age to forty-four years of age.

3. Pedestrian Collisions Involving Five to Nine Year Olds

Collisions involving five to nine year old pedestrians rose from 72 in 1981 to 107 in 1982, an increase of forty-nine percent. For comparison, data for the years 1978 through 1980 were 146 collisions, 92 collisions and 90 collisions respectively.

4. Motorcyclist Injuries

In common with the provincial trend (see appendix A-11) motorcycle involvement and motorcycle rider injuries both increased by approximately 7 percent in 1982 as compared with 1981. This increase in motorcycle injuries is contrasted by a 17.3 per cent decrease in injuries from all traffic collisions.

Table of Contents

	Page
CHAPTER ONE - TRENDS	1
General	2
Normalizing The Data	2
Collisions	2
Injuries	3
Fatalities	3
CHAPTER TWO - SELECTED CHARACTERISTICS	12
Injuries	13
Seatbelts	13
Motorcycle Injuries	13
Damages	14
Times of Occurrence	14
Impact Types	15
References	15
CHAPTER THREE - DRIVERS	27
Driver Age	28
Drinking Drivers	28
Hit and Run Collisions	28
Non-Licenced Drivers	29
Moving Violations	29
Motorcycles	30
Bicycles	30

	Page
CHAPTER FOUR - PEDESTRIANS	48
General	49
Age	49
Pedestrian Action	49
Time of Collision	49
Pedestrian Condition	50
Locations	50
Driver Action	50
Pedestrian Injuries	50
CHAPTER FIVE - VEHICLES	62
Vehicle Type	63
Vehicle Defects	63
CHAPTER SIX - ENVIRONMENT	67
Light Conditions	68
Road Surface	68
Pavement Markings	68
Road Character	68
Road Location and Traffic Control	69
Road Condition	69
Fixed Objects	69
CHAPTER SEVEN - LOCATIONS	79
General	80
Area Municipality	80
High Frequency Locations	80

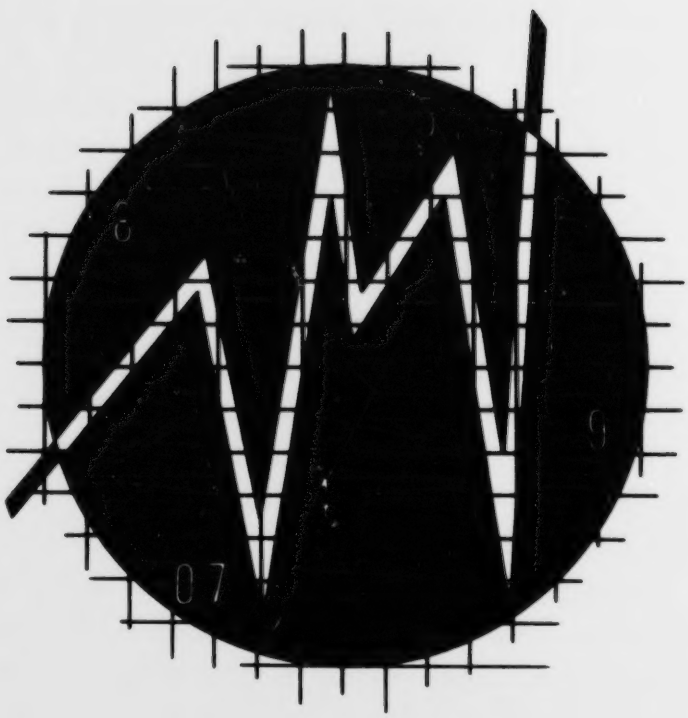
List of Exhibits

EXHIBIT		PAGE
1-1	Traffic Collision Rates - 1951 to Date Personal Injury Collision Rates - 1954 to Date	4
1-2	Personal Injury Rates in Traffic Collisions - 1951 to Date	5
1-3	Fatality Rates in Traffic Collisions - 1951 to Date	6
1-4	Collision Statistics - Historical Trends	7
1-5	Personal Injuries And Fatalities - Historic Trends	9
1-6	Pedestrian and Cyclist Injuries - Historic Trends	11
2-1	Injury Status of all Persons Involved	16
2-2	Driver Injury Status vs Safety Equipment	17
2-3	Motorcycle Driver Injuries	18
2-4	Property Damage Estimates	19
2-5	Estimated Damage to Motor Vehicles	19
2-6	Time Of Day Versus Collisions And Traffic Volume	20
2-7	Collision Occurrences By Time of Day And Day of Week	21
2-8	Day Of Week Versus Collisions And Traffic Volume	22
2-9	Month of Year Of Occurrence Of Collisions	23
2-10	Initial Impact Type Versus Classification	24
2-11	Initial Impact Type Versus Road Location	25
2-12	Initial Impact Type Versus Type of Traffic Control	26
3-1	Licenced Motor Vehicle Driver Age Versus Collision Involvement	31
3-2	Motor Vehicle Driver Age Versus Driver Action	32
3-3	Alcohol Involvement Versus Collision Classification	34
3-4	Time Of Day And Day Of Week Of Collisions Involving Alcohol	35
3-5	Driver Action Versus Driver Condition	36
3-6	Motor Vehicle Driver Age Versus Driver Condition	38

EXHIBIT		PAGE
3-7	Hit And Run Collisions	40
3-8	Hit and Run Classification Of Collisions	40
3-9	Licence Status Of Motor Vehicle Drivers Versus Classification Of Collision	41
3-10	Licence Status Of Motor Vehicle Drivers Versus Driver Condition	41
3-11	Licence Status Of Motor Vehicle Driver Versus Driver Action	42
3-12	Time Of Day Versus Collisions For Total Collisions Including Non-Licenced Driver And Collisions Involving Alcohol	43
3-13	Improper Driver Action Versus Enforcement	44
3-14	Motorcycle Driver Age Versus Driver Action	45
3-15	Cyclist Action Versus Age of Cyclist	46
4-1	Pedestrian Age Versus Population	51
4-2	Pedestrian Age Versus Action	52
4-3	Pedestrian Age Versus Action at Traffic Signals	54
4-4	Time of Day Versus Pedestrian Age	56
4-5	Pedestrian Condition	57
4-6	Pedestrian Age Versus Type of Traffic Control	58
4-7	Driver Action in Pedestrian Collisions	60
4-8	Pedestrian Age Versus Injury Status	61
5-1	Driver Action Versus Vehicle Type	64
5-2	Vehicle Defects	66
6-1	Visibility Conditions	70
6-2	Light Conditions	70
6-3	Road Surface Conditions	71
6-4	Road 1 Pavement Markings Versus Road Surface Conditions	71

List of Exhibits

EXHIBIT		PAGE
6-5	Road Character	72
6-6	Road Alignment	72
6-7	Location of Collisions	73
6-8	Traffic Control Versus Class Of Collision	74
6-9	Traffic Control Versus Road Location	75
6-10	Road Condition	76
6-11	Fixed Objects Struck Versus Road Location	77
6-12	Fixed Object Versus Class of Collision	78
7-1	Collisions Versus Area Municipality	81
7-2	Intersections with Highest Number of Collisions in 1982	82
7-3	Signalized Intersections with Highest Collision Rates in 1982	85
7-4	Overall Collision Rates for Selected Groups of Signalized Intersections	89
A-1	Causes Of Death 1980	
A-2	Accidental Causes Of Death 1980	
A-3	Accidental Causes Of Death 1980 (15 Years Of Age and Under)	
A-4	Population And Registration	
A-5	Motor Vehicle Accident Deaths and Rates	
A-6	Hamilton/Hamilton-Wentworth Pedestrian Injury Rates Historic Trends	
A-7	Trends Data - Regression Equations	
A-8	New Drivers' Collision Rates	
A-9	Collision Statistics - Selected Canadian Cities	
A-10	Fatal Collision Statistics - Canadian and U.S. Cities	
A-11	Hamilton Spectator Article — March 9, 1983.	



Chapter One
Trends

General

Since 1951, the number of motor vehicle collisions and persons injured in motor vehicle collisions in Hamilton and Hamilton-Wentworth has increased (Exhibits 1-4, 1-5, 1-6). However, in the same time period, the population of the reporting area has approximately doubled and motor vehicle registrations have risen by a factor of 3 (Appendix Exhibit A-4). There is also evidence to suggest that, with an improving highway system, each registered vehicle is driven a greater distance annually. The effect of increased population, vehicle registration and vehicle use is increased opportunity for motor vehicle collisions to occur.

Normalizing the Data

To fairly assess historical trends, collision data should be expressed in terms of rate (normalized) through the use of one of several factors. Annual motor vehicle use information would provide the most accurate assessment of a motorist's exposure, and hence, likelihood of involvement in a collision. Motor vehicle registration data is somewhat less accurate as a normalizing factor, but is utilized since exposure information is not available. Rates based on registration data should be examined with caution, as the reliability of the registration information is unknown.

Population also provides a suitable and accurate normalizing factor. Exhibits 1-1, 1-2, 1-3 and associated analysis in this chapter refer to data which has been calculated on a population rate basis.

Collisions

The overall motor vehicle collision rate is shown in Exhibit 1-1. As of January 1, 1978, the reporting level for property damage only collisions was raised from $200.00 to $400.00. In 1982 the overall number of collisions was approximately 11 percent lower than in 1981.

Due to changes in the reporting criteria and reporting area for the period for which historical data are available, trend analysis of the number of collisions would not be appropriate or meaningful.

Personal injury collisions (Exhibit 1-1) show a significant (at the 99 percent level) decline from 1965 to 1982.

The results of this regression analysis and others for data in this chapter are included in Appendix Exhibit A-7.

Injuries

The personal injury rate graph (Exhibit 1-2), parallels the closely related injury collision graph (Exhibit 1-1). From 1951 to 1982 a significant increase in the personal injury rate is noted, while from 1963 to 1982 a slight decrease (although not statistically significant) is shown.

The rate of occurrence of pedestrian injuries (Exhibit 1-2) has demonstrated a modest but consistent decrease from 1951 to 1982.

Fatalities

In 1982, twenty-seven persons died in motor vehicle collisions in Hamilton-Wentworth.

Since fatal collisions are rare events, small changes in the number of fatalities cause large fluctuations in the fatality rate (Exhibit 1-3). These fluctuations reduce the validity of statistical tests. Thus while the fatality rate for all collisions shows a slight downward trend, especially since 1968, this trend is not statistically significant. The overall fatality rate thus appears unchanged during the past 31 years. Comparable patterns are evident for Ontario and Canada (Appendix Exhibit A-5).

The fatality rate for pedestrians does display a reduction which is significant over the last 31 years.

Exhibit 1-1

TRAFFIC COLLISION RATES - 1951 TO DATE
PERSONAL INJURY COLLISION RATES - 1954 TO DATE

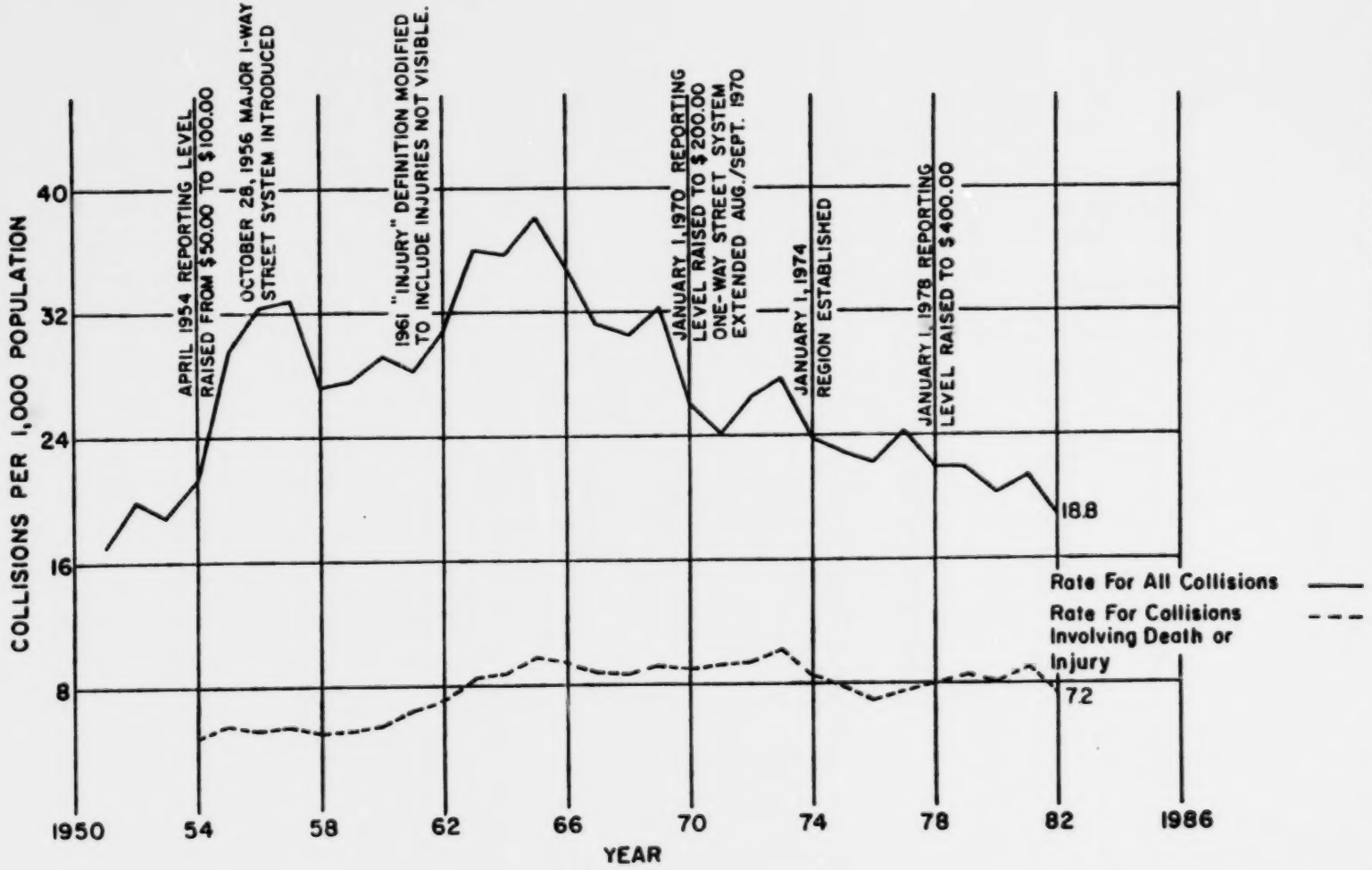


Exhibit 1-2

PERSONAL INJURY RATES IN TRAFFIC COLLISIONS
1951 TO DATE

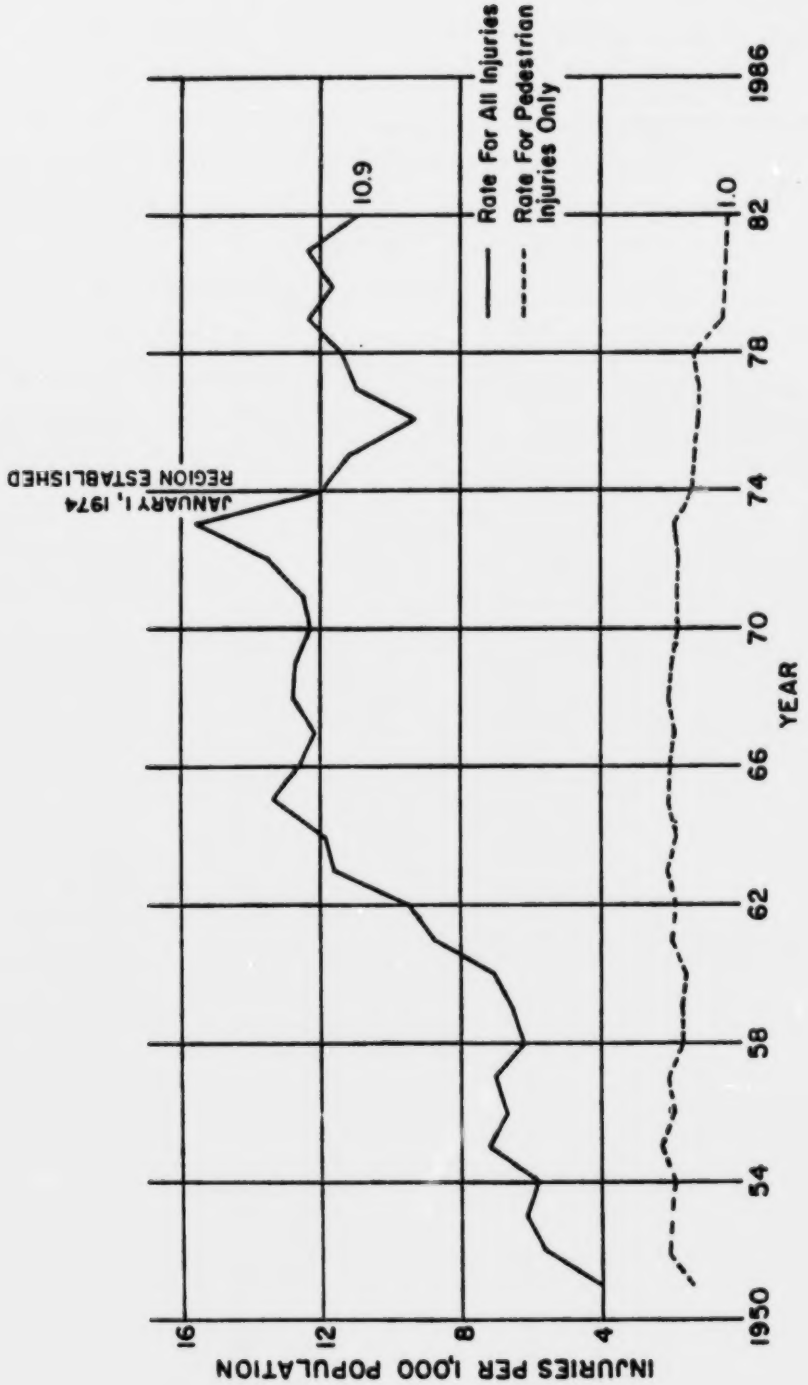


Exhibit 1-3

FATALITY RATES IN TRAFFIC COLLISIONS - 1951 TO DATE

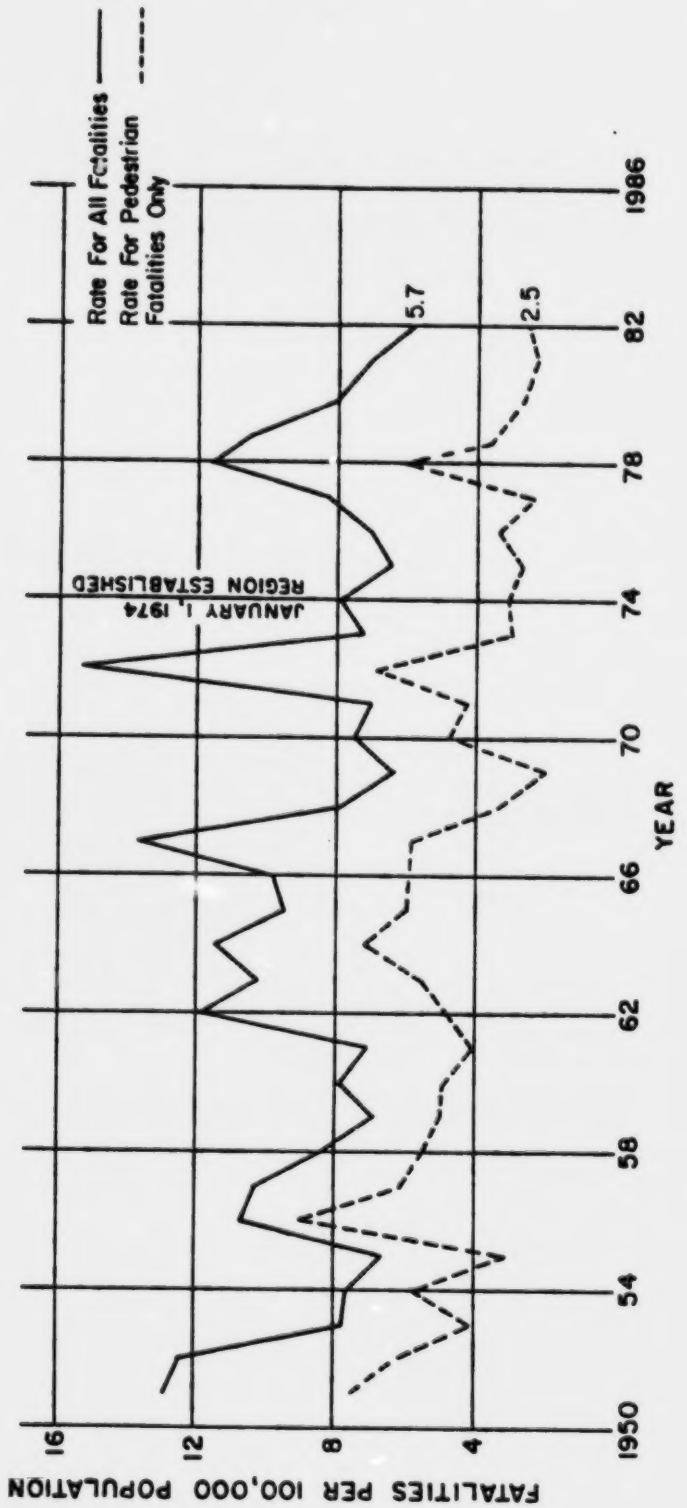


Exhibit 1-4

COLLISION STATISTICS - HISTORIC TRENDS

Year	Total No. of Collisions	Fatal Collisions	Injury Collisions	Property Damage Collisions	Estimated Total Property Damage ($)
1947	1,052	N/A	N/A	N/A	209,965
1948	1,351	N/A	N/A	N/A	312,170
1949	1,745	N/A	N/A	N/A	378,235
1950	2,304	N/A	N/A	N/A	522,535
1951	3,421	N/A	N/A	N/A	752,185
1952	4,219	N/A	N/A	N/A	892,329
1953	4,114	N/A	N/A	N/A	974,290
1954(a)	4,787	16	1,070	3,701	841,762
1955	6,691	13	1,297	5,381	1,014,339
1956	7,528	25	1,222	6,281	1,169,797
1957	7,973	25	1,376	6,572	1,382,399
1958	6,898	21	1,260	5,617	1,274,017
1959	7,189	18	1,337	5,834	1,388,015
1960	7,763	20	1,496	6,247	1,742,296
1961(a)	7,547	18	1,744	5,785	1,851,000
1962	8,338	28	1,904	6,406	2,160,000
1963	9,554	27	2,309	7,218	2,560,000

1964	9,948	32	2,455	7,461	2,886,000
1965	10,783	26	2,789	7,968	3,413,000
1966	9,950	27	2,757	7,166	3,521,000
1967	9,106	35	2,575	6,496	3,327,000
1968	8,983	21	2,547	6,415	4,449,000
1969	9,589	19	2,721	6,849	3,999,000
1970(a)	7,799	23	2,676	5,100	3,918,000
1971	7,314	22	2,821	4,471	4,647,000
1972	8,065	39	2,901	5,125	5,464,000
1973	8,499	23	3,143	5,333	6,208,000
1974(b)	9,599	29	3,364	6,206	7,886,000
1975	9,354	24	3,219	6,111	8,243,000
1976	9,146	28	2,816	6,302	9,262,000
1977	10,011	33	3,182	6,796	10,514,000
1978(a)	8,636	45	3,246	5,345	12,064,000
1979	8,798	39	3,389	5,370	13,325,000
1980	8,305	33	3,253	5,019	13,708,000
1981	8,660	28	3,398	5,234	15,536,040
1982	7,663	23	2,939	4,701	13,750,100

(a) Collision reporting criteria changed (See Page 4).

(b) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

Exhibit 1-5

PERSONAL INJURIES AND FATALITIES - HISTORIC TRENDS

Year	Total No. of Collisions	Persons Injured	Injury Rate/ 1,000 Pop.	Persons Killed	Death Rate/ 100,000 Pop.	Death Rate/ 10,000 Registered Vehicles
1947	1,052	563	N/A	26	N/A	N/A
1948	1,351	671	N/A	19	N/A	5.34
1949	1,745	738	N/A	29	N/A	N/A
1950	2,304	760	N/A	12	N/A	2.55
1951	3,421	815	4.0	26	12.9	5.13
1952	4,219	1,174	5.6	26	12.4	4.71
1953	4,114	1,322	6.1	17	7.8	2.84
1954(a)	4,787	1,304	5.8	17	7.6	2.71
1955	6,691	1,618	7.2	15	6.6	2.22
1956	7,528	1,570	6.7	25	10.7	3.57
1957	7,978	1,703	7.0	25	10.3	3.46
1958	6,898	1,573	6.2	21	8.4	2.77
1959	7,189	1,671	6.5	18	6.9	2.24
1960	7,763	1,871	7.1	21	7.9	2.54
1961(a)	7,547	2,311	8.7	19	7.1	2.22
1962	8,338	2,542	9.5	32	11.9	3.82
1963	9,554	3,075	11.6	27	10.2	3.03

1964	9,948	3,305	11.9	32	11.5	3.43	
1965	10,783	3,824	13.4	27	9.5	2.64	
1966	9,950	3,746	12.6	28	9.8	2.60	
1967	9,106	3,484	12.2	39	13.7	3.63	
1968	8,983	3,573	12.8	22	7.9	1.89	
1969	9,589	3,768	12.7	19	6.4	1.64	
1970(a)	6,759	3,717	12.3	23	7.5	2.00	
1971	7,314	3,876	12.5	23	7.0	1.91	
1972	8,065	4,055	13.5	46	15.3	3.42	(b)
1973	8,499	4,951	15.5	23	7.2	1.63	
1974(c)	9,599	4,678	11.9	31	7.9	2.00	(b)
1975	9,354	4,474	11.2	26	6.5	1.60	(b)
1976	9,146	3,811	9.3	29	7.1	1.78	(b)
1977	10,011	4,513	11.0	34	8.3	2.00	(b)
1978(a)	8,636	4,635	11.4	47	11.6	2.06	(d)
1979	8,798	4,923	12.1	42	10.3	2.20	(d)
1980	8,305	4,800	11.7	33	8.0	1.43	(d)
1981	8,660	5,015	12.3	31	7.6	1.16	(d)
1982	7,663	4,175	10.3	27	6.6	N/A	

(a) Collision reporting criteria changed (See Page 4).

(b) Registration estimated from total Ontario registrations.

(c) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

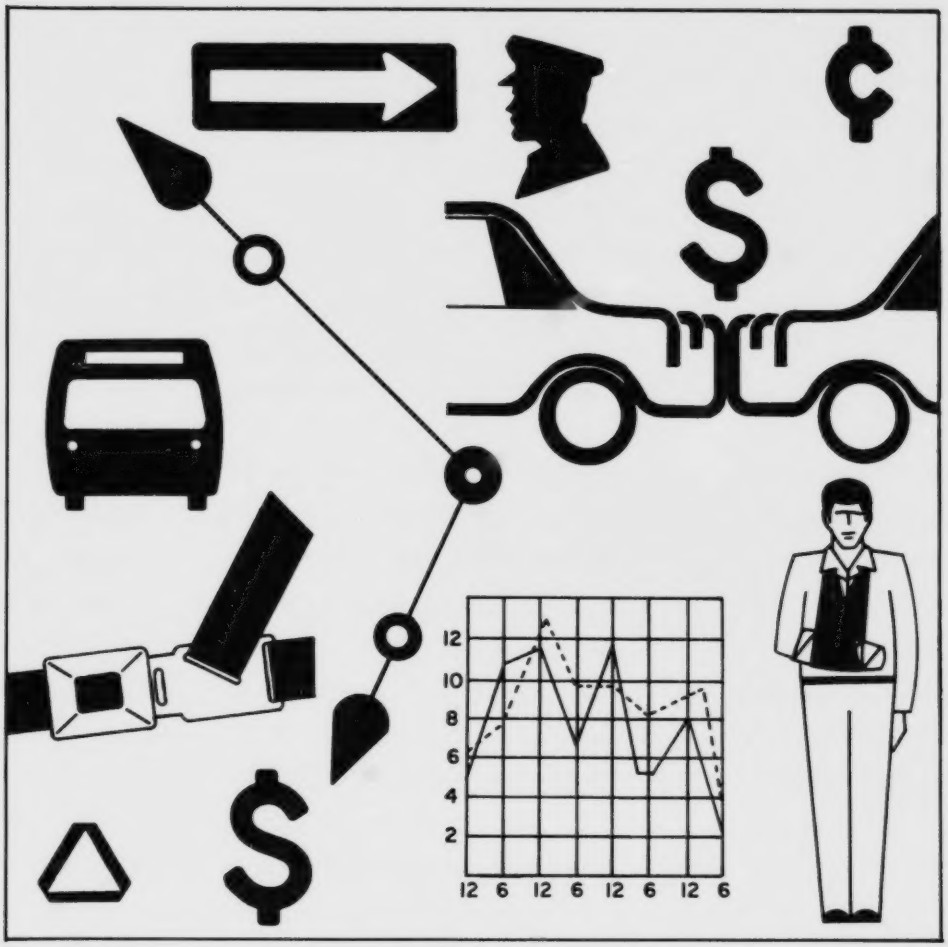
(d) Registration data from licence information.

Exhibit 1-6

PEDESTRIAN AND CYCLIST INJURIES HISTORIC TRENDS

YEAR	PEDESTRIAN		BICYCLIST	
	Injuries	Fatalities	Injuries	Fatalities
1947	141	21	N/A	N/A
1948	204	13	N/A	N/A
1949	271	18	43	-
1950	239	11	69	1
1951	284	15	89	-
1952	448	13	116	1
1953	464	9	113	1
1954	439	13	129	1
1955	517	7	141	1
1956	447	21	123	1
1957	526	15	124	2
1958	446	14	100	2
1959	456	13	120	1
1960	422	13	120	2
1961	522	11	112	1
1962	495	13	126	1
1963	558	15	120	1
1964	526	20	120	-
1965	582	17	140	-
1966	618	17	132	1
1967	537	17	113	-
1968	588	10	84	1
1969	602	6	91	2
1970	586	14	101	1
1971	570	13	155	2
1972	530	21	156	2
1973	569	9	197	1
1974(a)	555	13	192	3
1975	513	11	235	-
1976	480	14	195	-
1977	503	10	193	3
1978	542	25	162	1
1979	464	15	177	4
1980	434	12	178	1
1981	458	10	159	1
1982	396	10	252	2

(a) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.



Chapter Two
Selected Characteristics

Injuries

Of the 22,117 persons involved in collisions, 4,175 received injuries. The chance of an involved person sustaining an injury in a collision varied from a 16 percent chance for a motor vehicle rider or passenger to a 100 percent chance for a pedestrian (Exhibit 2-1). Although the risk of injury would appear to be significantly higher for motorcyclists, bicyclists and pedestrians, this phenomenum is partially or wholly explained by the reporting criteria. It is unlikely that a cyclist or pedestrian would be involved in a collision that resulted in over $400.00 damage without the cyclist or pedestrian being injured. Small or exposed vehicles such as bicycles also afford less protection in a collision.

Seatbelts

Although motor vehicle seatbelts were reported as being in use for 90 percent of involved drivers (Exhibit 2-2), field observations taken by the Province of Ontario in 1978 (2.1) suggest an actual usage rate for drivers in the order of 65 percent. This discrepancy could be interpreted to mean that a higher proportion of seatbelt users were involved in collisions, but is more likely to indicate an over-statement of seatbelt usage by persons involved in collisions. The involved individual may be concerned about receiving a summons for failure to wear his or her seatbelt or may be concerned about additional financial or civil responsibilities caused by failure to wear belts at the time of the collision.

It is estimated that in Hamilton-Wentworth in 1982, 1,650 persons would have received less severe injuries had they been wearing their seatbelts. Ontario statistics (2.2) indicate increased medical and hospital costs for unbelted persons involved in collisions. If applied to Hamilton-Wentworth in 1982, unbelted persons involved in collisions would have been responsible for extra costs of $350,000.00. These costs do not include injuries that may have been entirely prevented had seatbelts been worn.

Motorcycle Injuries

Eighty-four percent of motorcyclists involved in collisions received injuries, compared to 21 percent of all persons involved in collisions. This is indicative of the limited protection afforded to motorcycle riders involved in a collision.

Seventy-seven of 233 (33%) motorcyclists involved in collisions were reported as not wearing helmets, despite the Provincial law mandating helmet use (Exhibit 2-3).

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HAMILTON, ONTARIO

Motorcycle Injuries (Cont'd)

Helmet use did not appear to have an effect on the likelihood of a motorcyclist being injured in a collision. Helmets are intended to prevent head injury, but in a serious collision, the motorcycle rider is equally likely to receive injuries to other parts of the body.

Damages

Total damages in collisions in Hamilton-Wentworth amounted to a sum in excess of 13 million dollars (Exhibit 2-4), which includes damage to vehicles and property but does not include medical and hospital expenses, loss of income, or loss of future earnings. The estimated cost of property damage of each collision was $1,794 with 52 percent of the vehicles involved sustaining damage in excess of $600 (Exhibit 2-5). When the costs of medical attention, lost income and other effects are considered, the total cost of each collision may exceed $6,500 (2.3).

Times of Occurrence

A close similarity between the occurrence of collisions and traffic volumes, on a time of day basis (Exhibit 2-6), was observed. However, the collision rate (in terms of traffic volume) was greater than the daily average during the period from midnight to 5 a.m., when 799 or 10.4 percent of all collisions occurred.

The pattern of collision occurrences by time of day and day of week was summarized (Exhibit 2-7 and Exhibit 2-8), and distinct differences were found in the pattern of collision occurrence.

The explanation for variations in patterns of collisions by time of day and day of week may be associated with difference in travel patterns which change during the week due to the frequency of shopping or personal trips, or with psychological factors such as different drinking and stress patterns that might influence collision involvement.

The pattern of collision occurrences was compared on a month of year basis (Exhibit 2-9) and there was a difference between the number of collisions which occurred each month. The higher number of collisions occurring during the winter months is probably primarily due to drivers not adjusting to adverse weather and roadway conditions.

Impact Types

The type of initial impact was compared with the injury classification of the collisions (Exhibit 2-10) and it was determined (at the 95 percent level) that the probability of injury was not the same for all initial impact types.

The chance of being injured in an approaching or single motor vehicle collision was 49 to 53 percent compared to a 18 to 45 percent chance for other collision types. However, fewer approaching and single motor vehicle collisions resulted in injuries or fatalities (807 versus 2,155) than other collision types.

Greater than one half of all collisions were in intersections or associated with intersections (Exhibit 2-11). Twenty-six percent of collisions occurred at signalized intersections, and 21 percent at stop- or yield-controlled intersections (Exhibit 2-12).

Over one half of all collisions occurred at locations with no form of traffic control.

REFERENCES

2.1 Based on surveys conducted by the Ministry of Transportation and Communications of Ontario, July 1978.

2.2 Ontario Ministry of Health: The cost of hospital and medical treatment for a person injured while wearing seatbelts is $282; for those not wearing belts, $419.

2.3 J. J. Lawson, in "The Cost of Road Accidents and Their Application in Economic Evaluation of Safety Programs" estimated that, in 1978, the average cost of a motor vehicle collision was $4,500.00 for the direct costs of property damage, lost productive work and health care costs only. At an inflation rate of 10 percent per year, this estimate would be over $6,500.00 per collision in 1982.

Exhibit 2-1 **INJURY STATUS OF ALL PERSONS INVOLVED**

Category	Persons Involved	Persons Injured or Killed	Injuries/ Involved	TYPE OF INJURY Fatal	Major	Minor	Minimal
Driver	12,775	2,165	0.17	10	117	827	1,211
Bicyclist	259	254	0.98	2	13	122	117
Rider/Passenger	8,674	1,350	0.16	5	60	490	795
Pedestrian	406	406	1.00	10	63	197	136
Totals	22,114	4,175	0.19	27	253	1,636	2,259

THERE WAS APPROXIMATELY A 2 IN 10 CHANCE THAT A PERSON INVOLVED IN A TRAFFIC COLLISION WOULD BE INJURED.

Exhibit 2-2

DRIVER INJURY STATUS VS SAFETY EQUIPMENT IN USE

Driver Injury Status	SAFETY EQUIPMENT IN USE				
	All	Pelvic Only	None	Unknown	Total
None	9,464	261	425	472	10,622
Minimal	1,017	36	114	47	1,214
Minor	648	21	104	56	829
Major	69	2	21	27	119
Fatal	1	-	6	3	10
Total	11,199	320	670	605	12,794

DRIVERS WHOSE SEAT BELT USAGE WAS RECORDED	12,794
TOTAL DRIVERS WEARING PELVIC AND/OR SHOULDER BELTS	11,519
RECORDED DRIVER BELT USAGE	90.0%

THE REPORTED SEAT BELT USAGE RATE FOR DRIVERS INVOLVED IN COLLISIONS WAS 90%

Exhibit 2-3

MOTORCYCLE DRIVER INJURIES

Injury	Helmet in Use						Total
	Yes			No		Not Known	
None	20	(66.7)	(a)	10		2	32
Minimal	39	(66.1)		20		1	60
Minor	62	(62.0)		38		1	101
Major	24	(72.7)		9		-	33
Fatal	-	(-)		-		1	1
Unknown	-	(-)		-		6	6
Totals	145	(61.2)		77		11	233

86% OF MOTORCYCLE DRIVERS INVOLVED IN COLLISIONS FOR WHICH INJURY STATUS WAS RECORDED RECEIVED INJURIES. THE LIKELIHOOD OF INJURY WAS SIMILAR FOR HELMET USERS AND NON USERS (HELMETS OFFER PROTECTION ONLY FOR HEAD AND NECK INJURIES).

33% OF MOTORCYCLISTS INVOLVED IN COLLISIONS WERE RECORDED AS NOT WEARING SAFETY HELMETS.

(a) Numbers in brackets are percentages of row totals. Percentages exclude unknown helmet use.

Exhibit 2-4 **PROPERTY DAMAGE ESTIMATES (a)**

	Total	Average per Collision
Damage to Vehicles	$13,196,100.	$1,722.
Damage to Other Property	554,671.	72.
All Damage	13,750,100.	1,794.

THE AVERAGE DAMAGE FOR EACH REPORTED COLLISION WAS $1,794.

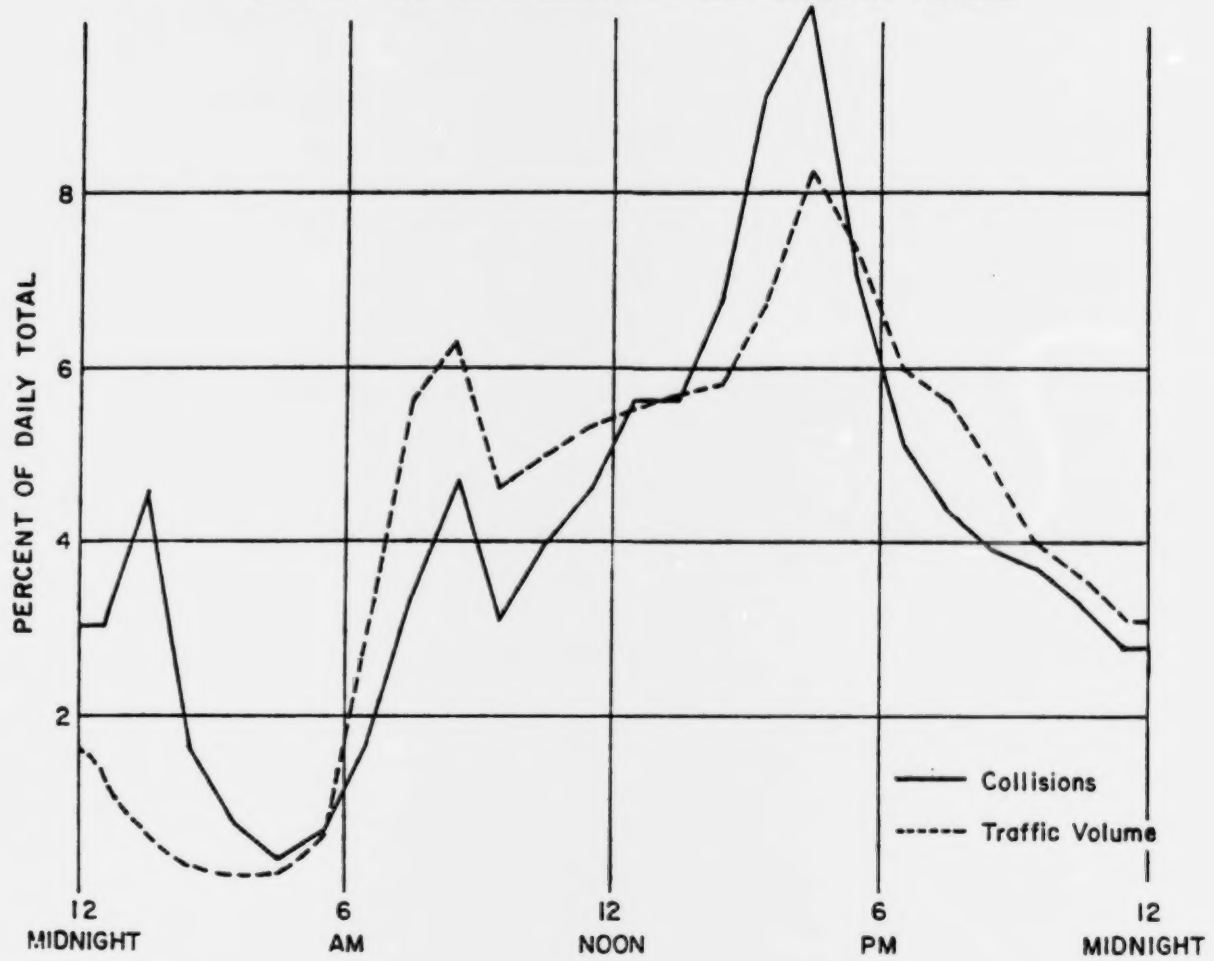
Exhibit 2-5 **ESTIMATED DAMAGE TO MOTOR VEHICLES (a)**

Damage	No. of Vehicles	% Of All Vehicles Involved
None	1,595	11.0
$0 - 199	1,463	10.1
$200 - 399	1,601	11.0
$400 - 599	2,299	15.8
$600 - 999	2,688	18.5
$1,000 - 1,999	2,836	19.5
$2,000 - 3,999	1,732	11.9
$4,000 and over	330	2.2
	14,544	100.0

OVER 52% OF THE VEHICLES INVOLVED IN COLLISIONS EXPERIENCED DAMAGE IN EXCESS OF $600.

(a) As estimated at the scene of the collision.

TIME OF DAY VS COLLISIONS AND TRAFFIC VOLUME



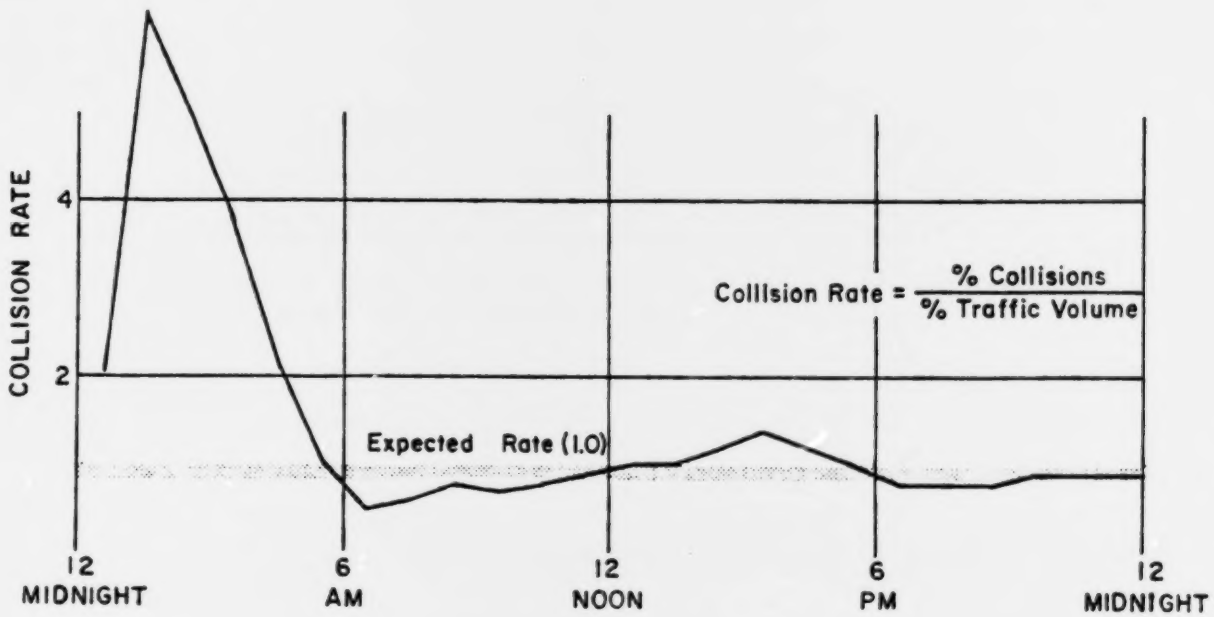


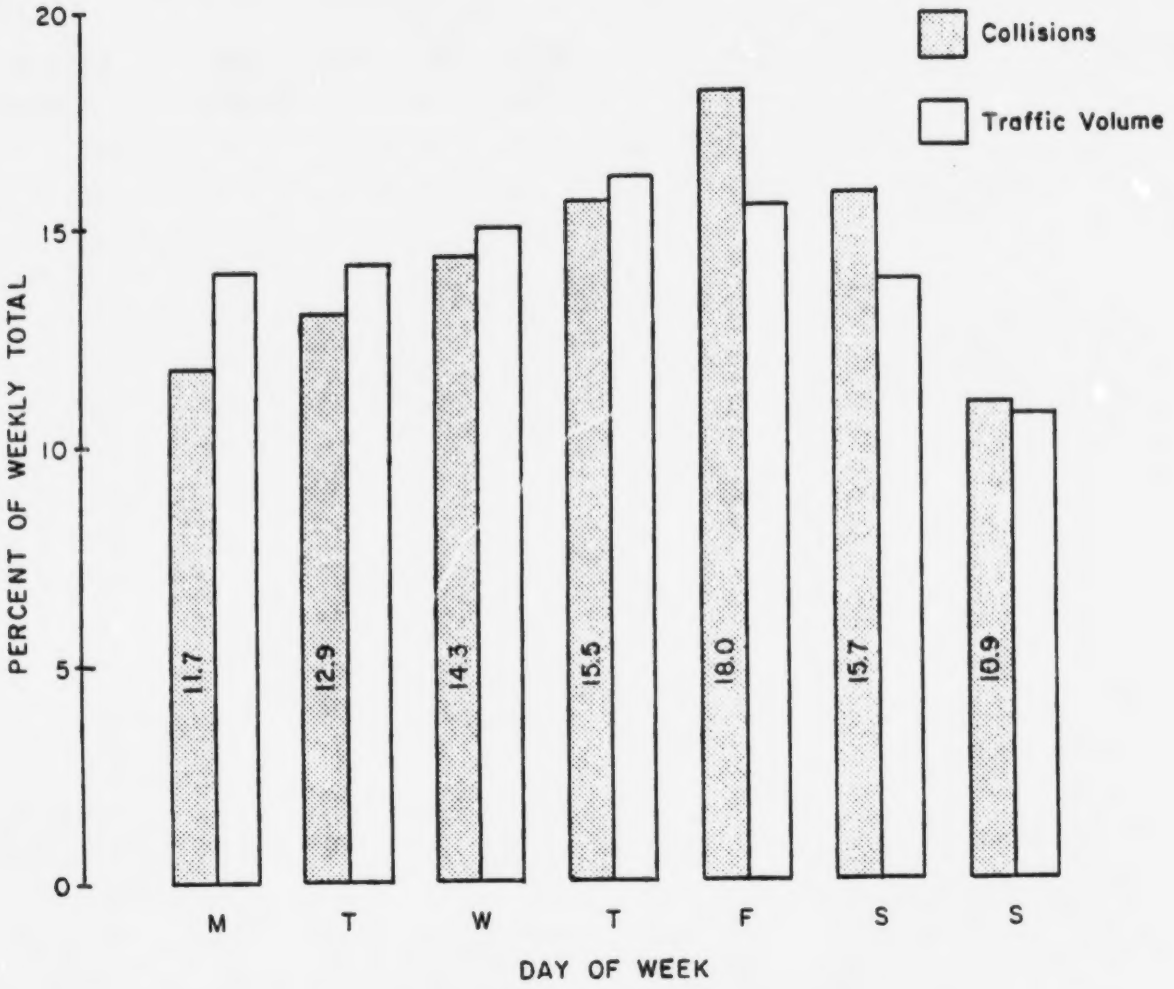
Exhibit 2-7

COLLISION OCCURRENCES BY TIME OF DAY AND DAY OF WEEK

Time	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTALS	(%)
12 - 1 a.m.	11	17	20	31	28	55	67	229	(3.0)
1 - 2 a.m.	3	23	34	36	54	101	100	351	(4.6)
2 - 3 a.m.	2	7	10	10	18	45	37	129	(1.7)
3 - 4 a.m.	1	8	3	-	6	21	19	58	(0.8)
4 - 5 a.m.	-	-	3	3	2	13	11	32	(0.4)
5 - 6 a.m.	5	2	2	5	7	14	15	50	(0.7)
6 - 7 a.m.	20	15	20	18	23	17	15	128	(1.7)
7 - 8 a.m.	39	48	57	52	42	15	11	264	(3.4)
8 - 9 a.m.	46	68	57	77	74	25	15	362	(4.7)
9 - 10 a.m.	29	38	33	41	41	36	19	237	(3.1)
10 - 11 a.m.	50	44	46	46	49	47	24	306	(4.0)
11 - 12 noon	61	51	40	45	81	57	16	351	(4.6)
12 - 1 p.m.	55	49	63	66	70	77	47	427	(5.6)
1 - 2 p.m.	53	47	52	65	69	85	56	427	(5.6)
2 - 3 p.m.	64	68	82	86	87	87	48	522	(6.8)
3 - 4 p.m.	97	100	127	128	118	88	43	701	(9.1)
4 - 5 p.m.	120	111	130	123	150	81	58	773	(10.1)
5 - 6 p.m.	56	79	82	123	98	67	39	544	(7.1)
6 - 7 p.m.	40	50	58	75	64	58	43	388	(5.1)
7 - 8 p.m.	38	43	46	54	70	51	36	338	(4.4)
8 - 9 p.m.	35	26	40	60	57	38	41	297	(3.9)
9 - 10 p.m.	30	28	40	39	56	49	40	282	(3.7)
10 - 11 p.m.	22	38	35	45	56	33	21	250	(3.3)
11 - 12 a.m.	22	26	18	33	61	42	15	217	(2.8)
Totals	889	986	1,098	1,261	1,381	1,202	836	7,663	(100.0)
%	(11.7)	(12.9)	(14.3)	(16.5)	(18.0)	(15.7)	(10.9)		

THE HIGHEST ONE HOUR COLLISION PERIOD WAS FRIDAY BETWEEN 4 P.M. AND 5 P.M.

DAY OF WEEK VS COLLISIONS AND TRAFFIC VOLUME



THE HIGHEST COLLISION RATE (a) OCCURRED ON SATURDAYS

(a) RATE = $\frac{\%\ \text{COLLISIONS}}{\%\ \text{VOLUME}}$

Exhibit 2-9

MONTH OF YEAR OF OCCURRENCE OF COLLISIONS

Month	Number of Collisions	Percentage of Total Collisions
January	734	9.6
February	722	9.4
March	564	7.4
April	594	7.8
May	560	7.3
June	703	9.2
July	581	7.6
August	584	7.6
September	650	8.5
October	605	7.9
November	676	8.8
December	690	9.0
	7,663	100.0

THE HIGHEST NUMBER OF COLLISIONS OCCURRED IN THE MONTH OF JANUARY.

Exhibit 2-10

INITIAL IMPACT TYPE VS CLASSIFICATION

Initial Impact Type	Classification A Fatal Injury No.	%	B Non-Fatal Injury No.	%	C Property Damage Only No.	%	D All Collisions No.	%	Column A + B / Column D
Rear End	1	(4.3)	797	(27.1)	965	(20.5)	1,763	(23.0)	0.45
Angle	4	(17.4)	880	(29.9)	1,555	(33.1)	2,439	(31.8)	0.36
Turning	-	(-)	302	(10.3)	676	(14.4)	978	(12.8)	0.31
Sideswipe	1	(4.3)	158	(5.4)	726	(15.4)	885	(11.5)	0.18
Approaching	10	(43.5)	341	(11.6)	362	(7.7)	713	(9.3)	0.49
Single Motor Vehicle	7	(30.4)	449	(15.3)	400	(8.5)	856	(11.2)	0.53
Other	-	(-)	12	(0.4)	17	(0.4)	29	(0.4)	0.41
	23	(100.0)	2,939	(100.0)	4,701	(100.0)	7,663	(100.0)	

55% OF THE INITIAL IMPACTS RECORDED WERE "ANGLE" AND "REAR END".

THE PROBABILITY OF FATALITY OR OF INJURY WAS HIGHEST IN APPROACHING OR SINGLE VEHICLE COLLISIONS

Exhibit 2-11

INITIAL IMPACT TYPE VERSUS ROAD LOCATION

	Road Location								
Impact Type	Non-Intersection	Intersection Related	In Intersection	At Private Drive	At Railroad	Underpass or Tunnel	Overpass or Bridge	Other	Totals
Rear End	799	600	213	134	6	1	7	3	1,763
Angle	568	294	1,231	324	7	1	7	7	2,439
Turning	149	195	504	127	1	-	-	2	978
Sideswipe	562	141	122	52	-	-	4	4	885
Approaching	348	87	213	55	2	2	2	4	713
Single Motor Vehicle	535	151	106	48	2	-	11	3	856
Other	17	6	4	-	-	-	1	1	29
TOTALS	2,978	1,474	2,393	740	18	4	32	24	7,663
%	(38.9)	(19.2)	(31.2)	(9.7)	(0.2)	(0.1)	(0.4)	(0.3)	(100.0)

50% OF COLLISIONS WERE IN, OR ASSOCIATED WITH INTERSECTIONS

Exhibit 2-12

INITIAL IMPACT TYPE VERSUS TYPE OF TRAFFIC CONTROL

Impact Type	Type of Traffic Control: Operating Traffic Signal	Operating Stop Sign	Operating Yield Sign	Police Control	School Guard	School Bus	No Control	Other	Totals
Rear End	559	148	27	4	2	3	1,017	3	1,763
Angle	678	764	15	1	1	-	974	6	2,439
Turning	369	237	5	2	1	-	362	2	978
Sideswipe	135	107	2	-	-	3	634	4	885
Approaching	111	156	2	1	1	1	437	4	713
Single Motor Vehicle	114	98	4	-	-	-	635	5	856
Other	2	3	-	-	1	-	22	1	29
TOTALS	1,968	1,513	55	8	6	7	4,081	25	7,663
%	(25.7)	(19.7)	(0.7)	(0.1)	(0.1)	(0.1)	(53.3)	(0.3)	(100.0)

GREATER THAN ONE-HALF OF ALL COLLISIONS (53%) OCCURRED AT LOCATIONS WITH NO TRAFFIC CONTROL.

Chapter Three
Drivers

Driver Age

Although sixteen to nineteen year olds make up only 7 percent of the licenced driving population, this age group was involved in 11.2 percent of reported collisions (Exhibit 3-1).

Furthermore, the involvement rate for the younger age groups may prove to be even higher if measured in terms of vehicle-miles driven. Younger drivers may be less likely to own their vehicle, less likely to require or use a vehicle for work trips and less likely to drive extended distances.

Drivers under 20 involved in collisions were less likely to have been driving properly at the time of the collision (Exhibit 3-2). Younger drivers involved in collisions were more likely to have committed improper driving actions resulting from poor judgement or lack of maturity. Frequent improper driver actions for this age group were "speed too fast", "loss of control of the vehicle", "failure to yield the right-of-way" and "following too close". Drivers over 65 years of age involved in collisions were more likely to have committed infractions involving non-compliance with traffic regulations such as "failure to yield the right-of-way" or "improper turn".

Drinking Drivers

Drinking drivers were involved in 11.7 percent of all reported collisions, 13.0 percent of the fatal and 14.4 percent of the injury collisions (Exhibit 3-3). There was a 27 percent greater chance of an injury occurring in a collision which involved a driver who had been drinking. Drivers reported as impaired had relatively constant probability of involvement in injury-causing or property damage only collisions.

Exhibit 3-4 indicates that 40 percent of the collisions which occurred during the period from 10 p.m. to 3 a.m. from Wednesdays to Sundays involved drinking drivers.

Exhibit 3-5 indicates that less than 17 percent of the drivers involved in collisions who had been drinking or were impaired were driving properly at the time of the collision and the most frequently indicated improper driver action was loss of control of the vehicle.

Nineteen, twenty and twenty-one year old age groups had above average likelihood of being under the influence of alcohol at the time of a collision (Exhibit 3-6).

Hit and Run Collisions

In 1982 there were 939 hit and run collisions involving one hit and run driver in each, of which 40 percent were subsequently apprehended (Exhibit 3-7). The hit and run collision is more likely to be of a "personal injury" classification as opposed to other

collisions (Exhibit 3-8), and this is of particular concern when a hit and run driver is attempting to escape responsibility for his actions. The hit and run driver may also be involved with other driving infractions at the time of the collision such as impaired driving or failure to have an operator's permit.

Non-Licenced Drivers

It was determined that the non-licenced driver, including those whose licence was under suspension, was more likely to be involved in a fatal or injury collision (Exhibit 3-9) and also more likely to be under the influence of alcohol at the time of the collision (Exhibit 3-10). The non-licenced driver was also more likely to have been driving too fast for roadway conditions at the time of the collision (Exhibit 3-11).

Exhibit 3-12 indicates that 56 percent of the collisions involving a non-licenced driver occurred between 6 p.m. and 6 a.m. whereas only 35 percent of all collisions occurred during this period. The exhibit also indicates that 79 percent of the alcohol-related collisions occurred during this period. The 6 p.m. to 6 a.m. period is characterized by high alcohol involvement, high involvement of non-licenced drivers and high collision involvement rate.

Moving Violations

The Regional Police Department issued over 50,000 moving violation summonses in 1982 and this effort at reducing traffic collisions by selective enforcement is recognized. However, it was determined that, in many cases, enforcement was directed at violations that do not relate proportionately to violations indicated in traffic collisions. This could indicate that the enforcement effort is very successful in that it eliminates collisions of related types. However, this may be an indication that a portion of the enforcement effort is directed at moving violations that are readily enforceable (Exhibit 3-13). It is recognized that some violations involved in collisions are difficult to enforce or represent an unfeasible countermeasure to collision occurrences. For example, "following too close" was indicated in 17.5 percent of the improper driving actions and "failure to yield the right-of-way" was indicated in 23.8 percent of improper driving actions. The former is difficult to enforce in the absence of a collision, and it is unfeasible to enforce the latter. Selective enforcement nonetheless is a recognized collision countermeasure technique for other types of moving violations.

Motorcycles

The proportion of motorcycle drivers involved in collisions driving properly in most age groups is higher than the proportion for other motor vehicle drivers for the same age groups (Exhibit 3-14). This exhibit also indicates that the most frequent improper driver action for motorcyclists was "lost control".

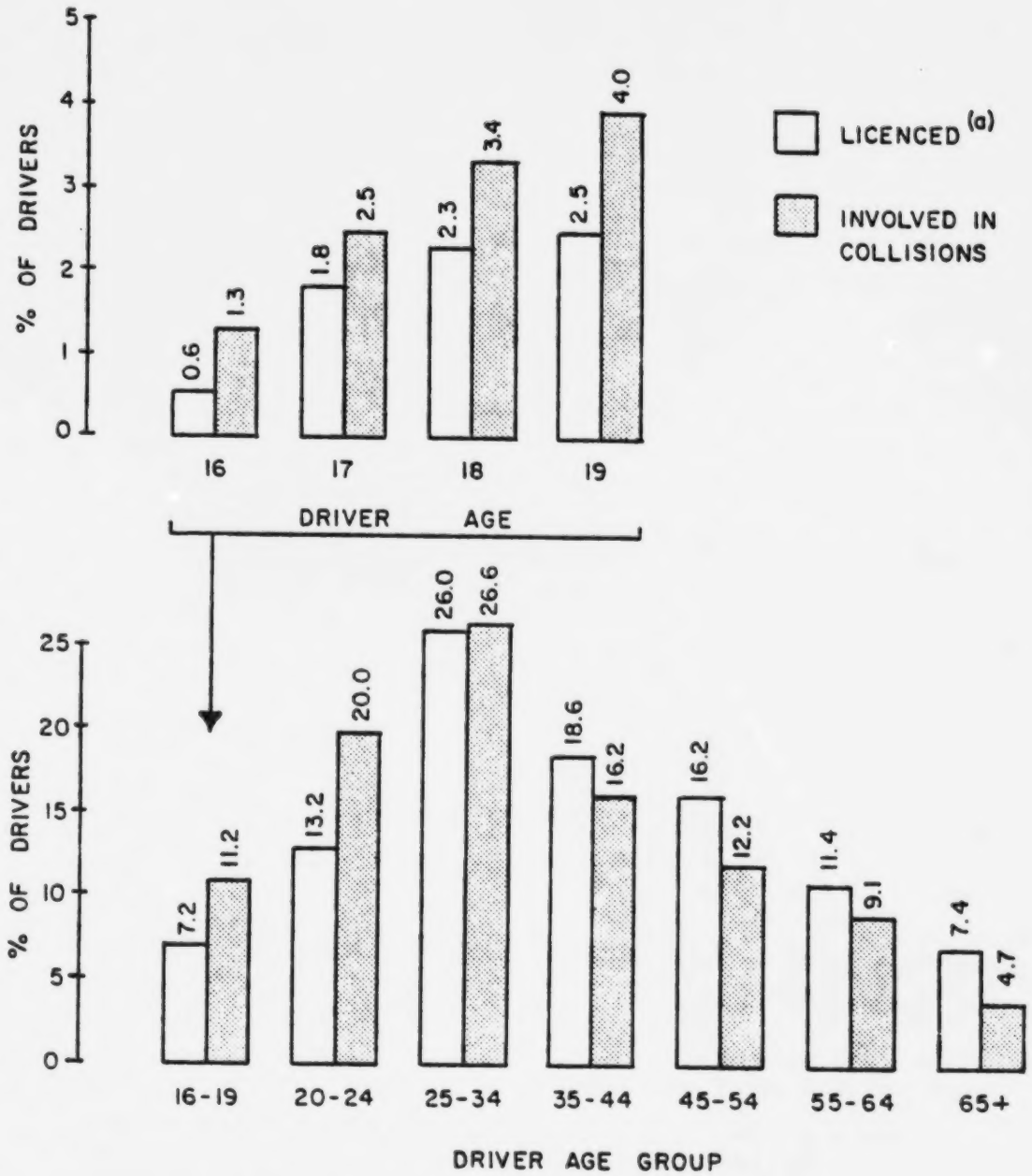
Without more refined data on exposure of motorcyclists in traffic under non-collision circumstances, the significance of a higher proportion of involved motorcycle drivers driving properly in a collision cannot be specifically determined. It could be hypothesized that a motorcycle operator is particularly prone to being involved in a collision when driving properly or alternatively, that the motorcycle operator is particularly adept in avoiding a collision for which he or she would have been responsible.

Bicycles

It was determined that responsibility for a collision involving a bicyclist decreased with increased bicyclist age and that 30 percent or less of bicyclists under 15 involved in collisions were recorded as driving properly (Exhibit 3-15). The most predominant known cyclist improper action indicated was "failure to yield the right-of-way" but instances of disobeying other traffic laws were also prominent.

Exhibit 3-1

LICENCED MOTOR VEHICLE DRIVER AGE VS COLLISION INVOLVEMENT



16 TO 19 YEAR OLD DRIVERS WERE INVOLVED IN MORE COLLISIONS PER LICENCED DRIVER THAN ANY OTHER AGE GROUP.

(a) Licenced in the Province of Ontario.

Exhibit 3-2

MOTOR VEHICLE DRIVER AGE VS DRIVER ACTION

Driver Action	0-4	5-9	10-14	15-19	20-24	25-34
Driving Properly	1	1	-	517	1,252	1,805
Following Too Close	-	-	-	128	244	282
Speed Too Fast	-	-	-	62	53	51
Improper Turn	-	-	-	70	95	143
Disobey Traffic Signal	-	-	-	30	51	79
Disobey Stop Sign	-	-	-	32	54	53
Fail to Yield R.O.W.	-	-	2	166	219	291
Improper Passing	-	-	-	12	18	26
Lost Control	-	-	1	176	205	202
Wrong Way One-Way Street	-	-	-	5	3	3
Not Known	-	-	-	89	162	174
Other	-	-	1	142	186	272
Disobey Other Control	-	-	-	5	10	19
Totals	1	1	4	1,434	2,552	3,400
% Drivers involved driving properly(b)	-	100.0	-	43.0	56.8	61.1

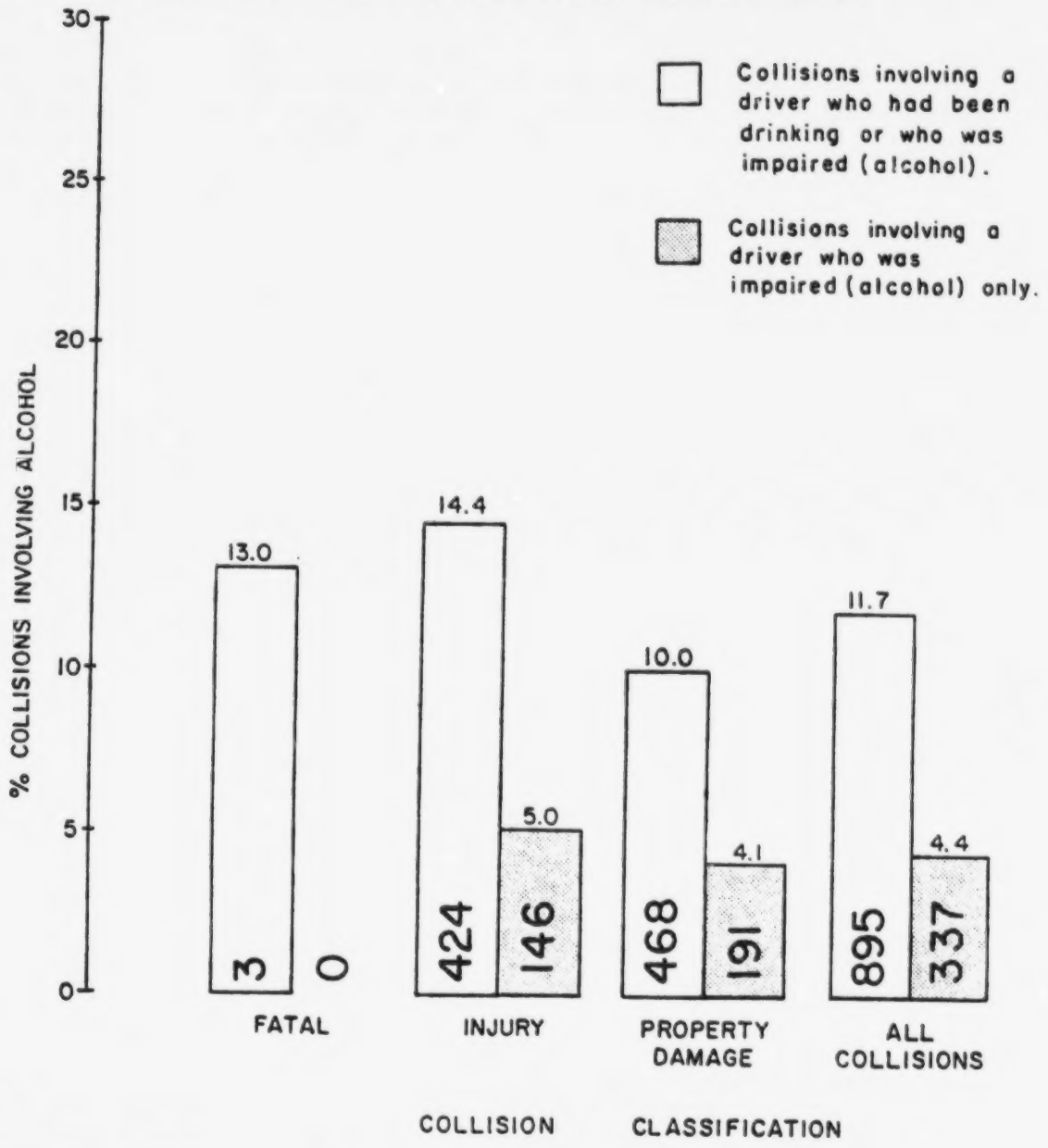
(a) Note - 1 age not stated.
(b) Excluding "Not Known" and "Other".

35-44	45-54	55-64	65-74	75 +	Totals	(%)	Driver Action
1,106	821	544	170	49	6,264	(49.0)	Driving Properly
153	108	68	27	4	1,014	(7.9)	Following Too Close
18	17	9	4	-	214	(1.7)	Speed Too Fast
102	105	96	41	14	666	(5.2)	Improper Turn
45	37	39	25	6	312	(2.4)	Disobey Traffic Signal
26	18	24	10	7	224	(1.8)	Disobey Stop Sign
193	185	192	92	35	1,375	(10.8)	Fail to Yield R.O.W.
11	9	14	4	1	95	(0.7)	Improper Passing
117	67	30	20	2	819	(6.4)	Lost Control
6	1	1	-	1	20	(0.2)	Wrong Way One-Way Street
118	74	65	29	12	723	(5.7)	Not Known
163	114	73	39	10	1,000	(7.8)	Other
8	1	3	1	-	47	(0.4)	Disobey Other Control
2,066	1,557	1,158	462	141	12,776	(100.0)	Totals
61.9	60.0	53.3	43.1	41.2	56.7		% Drivers involved driving properly (b)

THE OVERALL PERCENTAGE OF DRIVERS DRIVING PROPERLY WAS 56.7%. THE PERCENTAGE OF DRIVERS DRIVING PROPERLY FOR DRIVER AGE GROUPS UNDER 20 AND OVER 64 WAS LESS THAN 50%.

THE MOST FREQUENT RECORDED IMPROPER DRIVING ACTION WAS FAILING TO YIELD RIGHT-OF-WAY.

ALCOHOL INVOLVEMENT VS COLLISION CLASSIFICATION



COLLISIONS IN WHICH AN INJURY OR FATALITY OCCURRED WERE MORE LIKELY TO INVOLVE A DRIVER WHO HAD BEEN DRINKING THAN PROPERTY DAMAGE ONLY COLLISIONS.

IMPAIRED DRIVERS HAD RELATIVELY EQUAL INVOLVEMENT IN ALL CLASSIFICATIONS OF COLLISIONS.

Exhibit 3-4

TIME OF DAY AND DAY OF WEEK OF COLLISIONS INVOLVING ALCOHOL

Time of Day	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL
12 - 1 a.m.	2	4	8	11	11	28	26	90
1 - 2 a.m.	2	10	18	19	31	46	48	174
2 - 3 a.m.	-	2	6	4	8	22	15	57
3 - 4 a.m.	-	3	-	-	2	9	8	22
4 - 5 a.m.	-	-	1	1	1	6	6	15
5 - 6 a.m.	-	-	-	2	3	6	5	16
6 - 7 a.m.	-	1	-	-	-	3	5	9
7 - 8 a.m.	-	-	-	-	-	-	1	1
8 - 9 a.m.	-	1	1	2	1	2	4	11
9 - 10 a.m.	-	-	-	2	-	2	2	6
10 - 11 a.m.	-	1	1	1	1	-	1	5
11 - 12 noon	1	-	-	1	-	4	-	6
12 - 1 p.m.	2	2	1	1	3	3	1	13
1 - 2 p.m.	1	2	-	-	1	3	6	13
2 - 3 p.m.	3	-	1	2	1	5	-	12
3 - 4 p.m.	2	2	2	3	4	8	4	25
4 - 5 p.m.	3	4	4	2	7	13	4	37
5 - 6 p.m.	5	2	5	7	7	14	6	46
6 - 7 p.m.	3	6	9	3	11	9	4	45
7 - 8 p.m.	6	4	5	4	10	14	9	52
8 - 9 p.m.	6	2	5	6	10	6	8	43
9 - 10 p.m.	5	8	12	10	12	15	9	71
10 - 11 p.m.	3	10	4	6	18	10	3	54
11 - 12 midnight	4	7	6	11	25	11	8	72
Totals	48	71	89	98	167	239	183	895

40% OF THE COLLISIONS WHICH OCCURRED DURING THE PERIOD FROM 10:00 P.M. TO 3:00 A.M., WEDNESDAYS TO SUNDAYS INVOLVED ALCOHOL.

11% OF ALL ALCOHOL RELATED COLLISIONS OCCURRED BETWEEN 1:00 A.M. AND 2:00 A.M. ON SATURDAYS AND SUNDAYS.

11.7% OF ALL COLLISIONS INVOLVED ONE OR MORE DRIVERS WHO HAD BEEN DRINKING.

Exhibit 3-5

DRIVER ACTION VS DRIVER CONDITION

	Normal	Had Been Drinking	Impaired-Alcohol	Impaired-Drugs	Fatigue
Driving Properly	6,104	97	4	-	-
Following Too Close	935	37	16	-	1
Speed Too Fast	117	54	28	1	1
Improper Turn	605	29	14	1	-
Disobey Traffic Signal	274	24	6	1	-
Disobey Stop Sign	189	14	9	-	-
Fail to Yield Right-of-Way	1,287	46	18	-	2
Improper Passing	76	6	6	-	-
Lost Control	535	128	86	-	8
Wrong Way on One-Way Street	16	1	1	-	-
Not Known	394	52	39	-	-
Other	751	89	109	1	5
Disobey Other Control	42	4	1	-	-
Totals	11,325	581	337	4	17
% Drivers involved driving properly(a)	60.0	22.0	2.1	-	-

(a) Excluding not known and other.

Medical Defect	Not Known	Other	Totals	(%)	
1	59	1	6,266	(49.0)	Driving Properly
1	22	2	1,014	(7.9)	Following Too Close
1	12	-	214	(1.7)	Speed Too Fast
-	17	-	666	(5.2)	Improper Turn
1	5	1	312	(2.4)	Disobey Traffic Signal
-	11	1	224	(1.8)	Disobey Stop Sign
2	20	-	1,375	(10.8)	Fail to Yield Right-of-Way
1	6	-	95	(0.7)	Improper Passing
4	57	2	820	(6.4)	Lost Control
-	2	-	20	(0.2)	Wrong Way on One-Way Street
3	236	-	724	(5.7)	Not Known
4	40	1	1,000	(7.8)	Other
-	-	-	47	(0.4)	Disobey Other Control
18	487	8	12,777	(100.0)	Totals
9.1	-	-	56.7		% Drivers involved driving properly

LESS THAN 17% OF DRIVERS WHO HAD BEEN DRINKING OR WERE IMPAIRED WERE RECORDED AS DRIVING PROPERLY AT THE TIME OF THE COLLISION.

Exhibit 3-6

MOTOR VEHICLE DRIVER AGE VS DRIVER CONDITION

Driver Condition	0 - 4	5 - 9	10-14	15	16	17	18	19	20	21
Normal	1	1	3	5	139	274	378	435	466	489
Had Been Drinking	-	-	1	1	8	15	23	41	35	36
Impaired - Alcohol	-	-	-	1	1	8	9	14	20	20
Impaired - Drugs	-	-	-	-	-	-	-	-	1	-
Fatigue	-	-	-	-	-	1	1	1	3	1
Medical Defect	-	-	-	-	-	-	-	-	-	-
Not Known	-	-	-	1	11	17	24	25	30	16
Other	-	-	-	-	-	-	1	-	-	-
Totals	1	1	4	8	159	315	436	516	555	562
% Drinking Drivers Involved (Excluding Not Known and Other)	-	-	25.0	28.6	6.1	7.7	7.8	10.3	10.5	10.3

(a) Three driver ages not stated.

22-24	25-34	35-44	45-54	55-64	65-74	75 +	Total	%	Driver Condition
1,260	2,986	1,853	1,412	1,068	422	133	11,325	88.6	Normal
70	183	67	61	28	10	2	581	4.6	Had Been Drinking
40	86	61	46	22	7	2	337	2.6	Impaired-Alcohol
-	1	1	-	-	1	-	4	0.1	Impaired-Drugs
1	4	3	-	1	1	-	17	0.1	Fatigue
4	5	4	1	2	2	-	18	0.1	Medical Defect
60	134	77	37	36	16	2	486	3.8	Not Known
-	1	-	-	1	3	2	8	0.1	Other
1,435	3,400	2,066	1,557	1,158	462	141	12,776	100.0	Totals
8.0	8.2	6.4	7.1	4.5	3.8	2.8	7.5		% Drinking Drivers Involved (Excluding Not Known and Other)

7.5% OF ALL DRIVERS INVOLVED HAD BEEN DRINKING OR WERE IMPAIRED BY ALCOHOL AT THE TIME OF THE COLLISION.

THE 19, 20 AND 21 YEAR OLD AGE GROUPS HAD ABOVE AVERAGE LIKELIHOODS OF BEING UNDER THE INFLUENCE OF ALCOHOL AT THE TIME OF A COLLISION.

Exhibit 3-7

HIT AND RUN COLLISIONS

HIT AND RUN COLLISIONS	939	
HIT AND RUN DRIVERS (a)	939	
DRIVERS APPREHENDED	371	(40%)

40% OF HIT AND RUN DRIVERS WERE SUBSEQUENTLY APPREHENDED.

Exhibit 3-8

HIT AND RUN COLLISION CLASSIFICATION

COLLISIONS IN WHICH:	FATAL	INJURY	PROPERTY DAMAGE	TOTAL
Driver(s) Apprehended	-	241	130	371
Driver(s) Not Apprehended	-	452	116	568
TOTAL	-	693 (73.8%)	246 (26.2%)	939 (100%)

73.8% OF HIT AND RUN COLLISIONS INVOLVED PERSONAL INJURY.

(a) Some collisions involved more than one hit and run driver.

Exhibit 3-9

LICENCE STATUS OF MOTOR VEHICLE DRIVERS VS CLASSIFICATION OF COLLISION

Classification	Non-Licenced (a) No.	(% of Non-Licenced)	Licenced No.	(% of Licenced)
Fatal	1	(0.4)	34	(0.3)
Injury	100	(42.4)	4,763	(37.9)
Property Damage	135	(57.2)	7,744	(61.8)
Total	236	(100.0)	12,541	(100.0)

A HIGHER PROBABILITY OF A FATAL OR INJURY COLLISION IS ASSOCIATED WITH THE INVOLVEMENT OF A NON-LICENCED DRIVER.

Exhibit 3-10

LICENCE STATUS OF MOTOR VEHICLE DRIVERS VS DRIVER CONDITION

Driver Condition	Non-Licenced (a) No.	(% of Non-Licenced)	Licenced No.	(% of Licenced)
Normal	109	(46.1)	11,216	(89.4)
Had Been Drinking	41	(17.4)	540	(4.3)
Impaired - Alcohol	46	(19.5)	291	(2.3)
Impaired - Drugs	1	(0.4)	3	(0.1)
Fatigue	-	(-)	17	(0.1)
Medical Defect	3	(1.3)	15	(0.1)
Not Known	36	(15.3)	451	(3.6)
Other	-	(-)	8	(0.1)
Total	236	(100.0)	12,541	(100.0)

A HIGHER PROBABILITY OF ALCOHOL USE WAS ASSOCIATED WITH THE INVOLVEMENT OF A NON-LICENCED DRIVER.

AN UNLICENCED DRIVER INVOLVED IN A COLLISION WAS OVER FIVE TIMES AS LIKELY TO HAVE BEEN UNDER THE INFLUENCE OF ALCOHOL OR DRUGS AS A LICENCED DRIVER.

(a) Information on 9 drivers not included.

Exhibit 3-11
LICENCE STATUS OF MOTOR VEHICLE DRIVER VS DRIVER ACTION

Driver Action	Non-Licenced (b) No.	(% of Non-Licenced)	Licenced No.	(% of Licenced)
Driving Properly	42	(17.8)	6,224	(49.6)
Following Too Close	5	(2.1)	1,009	(8.1)
Speed Too Fast	17	(7.2)	197	(1.6)
Improper Turn	12	(5.1)	654	(5.2)
Disobey Traffic Signal	8	(3.4)	304	(2.4)
Disobey Stop Sign	6	(2.5)	218	(1.7)
Fail to Yield R.O.W.	19	(8.1)	1,356	(10.8)
Improper Passing	2	(0.9)	93	(0.7)
Lost Control	54	(22.9)	766	(6.1)
Wrong Way on One Way Street	1	(0.4)	19	(0.2)
Not Known	34	(14.4)	690	(5.5)
Other	35	(14.8)	965	(7.7)
Disobey Other Control	1	(0.4)	46	(0.4)
Total	236	(100.0)	12,541	(100.0)
% Drivers Driving Properly (a)		(25.2)		(57.2)

25% OF INVOLVED NON-LICENCED DRIVERS WERE DRIVING PROPERLY COMPARED WITH 57% OF LICENCED DRIVERS.

THE MOST FREQUENT RECORDED IMPROPER DRIVING ACTIONS FOR NON-LICENCED DRIVERS WERE "LOST CONTROL" AND "FAIL TO YIELD RIGHT OF WAY".

(a) Excluding "Not Known" and "Other".

(b) Information on 9 drivers not included.

Exhibit 3-12

TIME OF DAY VERSUS COLLISIONS FOR TOTAL COLLISIONS, COLLISIONS INVOLVING NON-LICENCED DRIVERS AND COLLISIONS INVOLVING ALCOHOL.

Time of Day	Collisions Involving Non-Licenced Drivers No.	(%)	% of Collisions Involving Alcohol	% of Total Collisions Occurring
12 - 1 a.m.	14	5.9	10.1	3.0
1 - 2 a.m.	19	8.0	19.4	4.6
2 - 3 a.m.	7	3.0	6.4	1.7
3 - 4 a.m.	3	1.3	2.5	0.8
4 - 5 a.m.	5	2.1	1.7	0.4
5 - 6 a.m.	2	0.8	1.8	0.7
6 - 7 a.m.	2	0.8	1.0	1.7
7 - 8 a.m.	2	0.8	0.1	3.4
8 - 9 a.m.	8	3.4	1.2	4.7
9 - 10 a.m.	3	1.3	0.7	3.1
10 - 11 a.m.	6	2.5	0.6	4.0
11 - 12 noon	2	0.8	0.7	4.6
12 - 1 p.m.	13	5.5	1.5	5.6
1 - 2 p.m.	10	4.2	1.5	5.6
2 - 3 p.m.	12	5.1	1.3	6.8
3 - 4 p.m.	16	6.8	2.8	9.1
4 - 5 p.m.	26	11.0	4.1	10.1
5 - 6 p.m.	16	6.8	5.1	7.1
6 - 7 p.m.	12	5.1	5.0	5.1
7 - 8 p.m.	18	7.6	5.8	4.4
8 - 9 p.m.	11	4.6	4.8	3.9
9 - 10 p.m.	9	3.8	7.9	3.7
10 - 11 p.m.	12	5.1	6.0	3.3
11 - 12 midnight	9	3.8	8.0	2.8
Totals	237	100.0	100.0	100.0

BETWEEN 7 P.M. AND 6 A.M., THERE WAS A HIGHER PROPORTION OF NON-LICENCED DRIVERS INVOLVED IN COLLISIONS.
ALCOHOL INVOLVEMENT IN COLLISIONS FOLLOWED A SIMILAR PATTERN.

Exhibit 3-13

IMPROPER DRIVER ACTIONS VS ENFORCEMENT

Column A	Column B		
Apparent Improper Driver Action	% of Improper Driver Actions In Collisions	% of All Comparable Charges Laid in 1982 by Hamilton-Wentworth Police	Column B / Column A
Follow too close	17.5	2.0	0.1
Speed too fast	3.7	46.2	12.5
Improper turn	11.5	19.7	1.7
Disobey traffic signal	5.4	12.9	2.4
Disobey stop or yield sign	3.9	8.1	2.1
Fail to yield right-of-way	23.8	2.0	0.1
Improper passing	1.6	0.4	0.2
Lost Control	14.2	-	-
Wrong way on one-way street	0.3	3.0	10.0
Disobey other control	0.8	0.2	0.2
Other	17.3	5.7	0.3
	100.0	100.0	

41% OF IMPROPER DRIVER ACTIONS ASSOCIATED WITH COLLISIONS ARE DRIVER ACTIONS WHICH CANNOT BE READILY ENFORCED, SUCH AS FOLLOWING TOO CLOSELY, OR FAILING TO YIELD THE RIGHT OF WAY.

A PREDOMINANT NUMBER OF CHARGES WERE LAID UNDER LAWS WHICH ARE READILY ENFORCED.

Exhibit 3-14

MOTORCYCLE DRIVER AGE VS DRIVER ACTION

Driver Action	0 - 14	15 - 19	20 - 24	25 - 34	35 - 44	45 +	Total	(%)
Driving Properly	-	30	45	34	10	5	124	(54.6)
Following Too Close	-	6	6	4	1	-	17	(7.5)
Speed Too Fast	-	2	2	3	1	1	9	(4.0)
Improper Turn	-	2	1	2	-	2	7	(3.1)
Disobey Traffic Signal	-	-	1	3	-	-	4	(1.8)
Disobey Stop Sign	-	1	-	1	-	-	2	(0.9)
Fail to Yield R.O.W.	1	3	3	1	-	-	8	(3.5)
Improper Passing	-	1	1	1	-	-	3	(1.3)
Lost Control	-	6	12	9	1	1	29	(12.8)
Wrong Way One-Way Street	-	1	-	-	-	-	1	(0.4)
Not Known	-	4	8	2	-	-	14	(6.2)
Other Disobey	-	4	-	3	1	-	8	(3.5)
Other Control	-	-	1	-	-	-	1	(0.4)
Totals	1	60	80	63	14	9	227	(100.0)
% Involved Motorcycle Drivers Driving Properly[a]	-	53.6	62.5	58.6	71.4	55.6	60.5	
% Involved Drivers Driving Properly for all Vehicle Types[a]	14.3	43.0	56.8	61.1	61.9	60.0	54.6	

OVERALL, THE MOTORCYCLE DRIVER WAS MORE LIKELY TO BE DRIVING PROPERLY THAN A MOTOR VEHICLE OPERATOR.

THE MOST FREQUENT IMPROPER MOTORCYCLE DRIVER ACTION WAS "LOST CONTROL".

(a) Excluding "not known" and "other".

Exhibit 3-15

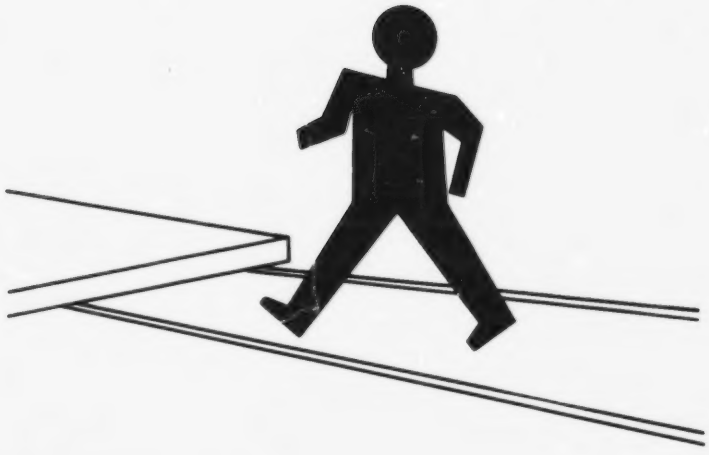
CYCLIST ACTION VS AGE OF CYCLIST

Apparent Cyclist Action	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24
Driving Properly	1	4	18	32	18
Following Too Close	-	-	1	2	1
Speed Too Fast	-	1	1	1	-
Improper Turn	-	3	6	5	2
Disobey Traffic Signal	-	-	5	2	2
Disobey Stop Sign	-	3	7	5	2
Fail to Yield Right-of-Way	1	9	14	3	2
Improper Passing	-	-	-	-	-
Lost Control	1	5	4	4	1
Wrong Way on One-Way Road	-	-	4	5	4
Not Known	1	5	6	6	5
Other	-	3	7	8	2
Disobey Other Control	-	-	-	3	1
Totals	3	33	73	76	40
% Involved Cyclists Driving Properly (a)	-	16.0	30.0	51.6	54.5

(a) Excluding "Not Known" and "Other".

25 - 34	35 - 44	45 - 54	55 +	Totals	(%)	Apparent Cyclist Action
15	5	1	1	94	(35.7)	Driving Properly
-	-	-	-	4	(1.5)	Following Too Close
-	-	-	-	3	(1.1)	Speed Too Fast
-	-	-	-	16	(6.1)	Improper Turn
-	1	-	-	10	(3.8)	Disobey Traffic Signal
3	-	-	-	20	(7.6)	Disobey Stop Sign
1	-	-	-	30	(11.4)	Fail to Yield Right-of-Way
3	-	-	-	3	(1.1)	Improper Passing
-	-	-	-	15	(5.7)	Lost Control
-	-	-	-	13	(4.9)	Wrong Way on One-Way Road
-	1	-	1	25	(9.5)	Not Known
4	1	-	1	26	(9.9)	Other
-	-	-	-	4	(1.5)	Disobey Other Control
26	8	1	3	263	(100.0)	Totals
68.2	83.3	100.0	100.0	44.3		% Involved Cyclists Driving Properly

CYCLISTS UNDER 15 WERE MOST LIKELY TO BE DRIVING IN A MANNER THAT VIOLATED BASIC RULES OF THE ROAD.



Chapter Four
Pedestrians

General

In 1982, there were 388 pedestrian collisions resulting in 396 pedestrian injuries, and 10 fatalities.

Age

The relationship between the Regional population distribution and pedestrian involvement in collisions in 1982 was reviewed (Exhibit 4-1). It was determined that 5 to 9 year old pedestrians had a rate of collision involvement over 3 1/2 times that expected when compared on the basis of the age distribution of the Regional population.

The variations in rate might be explained by certain pedestrian age groups crossing streets more frequently than others (i.e. exposure). It is, however, unlikely that the 5 to 9 year old group would have different exposure to traffic than the 10 to 14 year old group, and, therefore, the 5 to 9 year old pedestrian would appear to be considerably more prone to collision involvement.

Pedestrian Action

Exhibit 4-2 indicates the pedestrian action at the time of the collision versus pedestrian age. In general, the instances of unsafe pedestrian action for pedestrians involved in collisions were greater for pedestrians under 10 years of age.

This exhibit also indicates that the actions of "coming from behind a parked car" or "unexpectedly running into the roadway" accounted for 31 percent of the pedestrian actions at the time of the collisions. These unsafe actions are particularly associated with pedestrians under 10 years of age.

Pedestrians under 14 years of age were more likely to be involved in collisions as a result of not crossing with the right of way at traffic signals (Exhibit 4-3).

Time of Collision

An analysis was performed on the time of day of collisions compared to pedestrian age (Exhibit 4-4) and it was determined that 36 percent of pedestrians were injured in collisions which occurred between 3 p.m. and 6 p.m. Seventy-five pedestrian collisions involved children between 5 and 14 years of age occurred at school crossing times.* This represented 19 percent of the 388 pedestrian collisions in 1982 or 49

* School crossing times: 8:00 a.m. - 9:15 a.m., 11:30 a.m. - 1:45 p.m., 3:30 p.m. - 4:45 p.m., Monday - Friday; excluding July 1 - September 6, Inclusive.

percent of all collisions involving 5 - 14 year olds. Of the 75 collisions involving school-age children during school-crossing hours, 13 occurred at traffic signals.

Pedestrian Condition

In most cases, the condition of the pedestrian involved in the collision was reported as normal. However, in approximately 8 percent of the collisions involving pedestrians, the pedestrian condition was recorded as "had been drinking" or "impaired" (Exhibit 4-5).

Locations

Exhibit 4-6 indicates the pedestrian age for pedestrians involved in collisions compared with the type of traffic control. In 55 percent of the pedestrian collisions, the collision occurred at a mid-block or other location with no control. For pedestrians under 10 years of age, 74 percent were involved at mid-block or other locations with no control. This is to be expected, as the majority of collisions that involved a young pedestrian resulted from the pedestrian entering the roadway unexpectedly.

Driver Action

Exhibit 4-7 indicates that in approximately 66 percent of the motor vehicle-pedestrian collisions, the driver was recorded as driving properly. This figure does not necessarily suggest that the drivers involved in these collisions were totally without blame but does indicate that a majority of pedestrian collisions are associated with improper pedestrian action or lack of awareness of traffic conditions at the time of the collision.

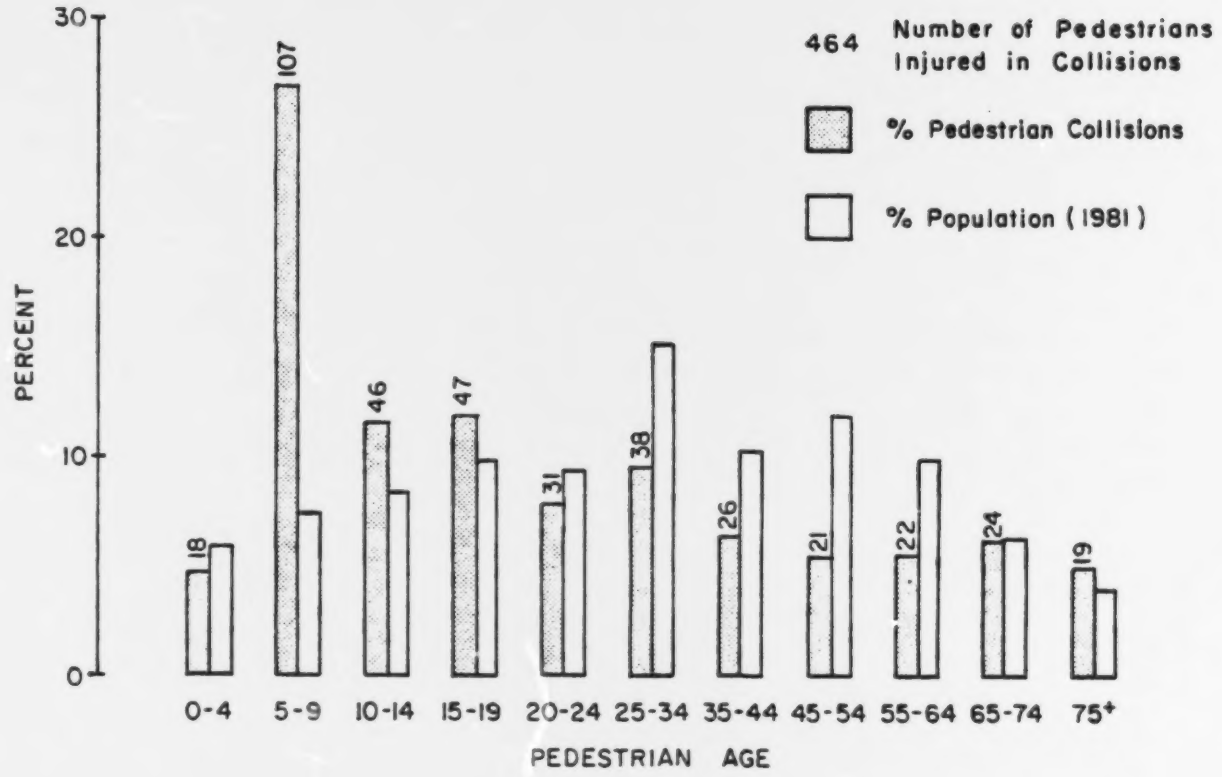
Of the 34 percent of motor vehicle-pedestrian collisions in which the driver was not driving properly, the most frequently recorded driver action was failing to yield the right-of-way (associated with 10 percent of all motor vehicle-pedestrian collisions).

Pedestrian Injuries

Most pedestrians (approximately 80%) suffered only minor injuries when involved in a collision. Exhibit 4-8 indicates that pedestrians under 5 or over 54 years of age were more likely to suffer serious injury. This figure may be as a result of crossing behaviour or may simply reflect the average persons' ability to recover from injury or partially avoid the collision.

Exhibit 4-1

PEDESTRIAN AGE VS POPULATION



5 TO 9 YEAR OLD PEDESTRIANS HAD A COLLISION INVOLVEMENT ALMOST TWICE THE AVERAGE.

Exhibit 4-2

PEDESTRIAN AGE VS ACTION

Pedestrian Action	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 34
Crossing intersection with right-of-way	-	1	7	14	7	11
Crossing intersection without right-of-way	-	12	6	6	2	1
Crossing intersection - no control	1	-	3	3	1	2
Walk with traffic	1	1	-	-	-	-
Walk against traffic	-	-	-	3	2	2
On sidewalk or shoulder	-	2	3	4	3	1
Play/work on highway	2	2	-	2	-	3
Come from behind parked car	8	24	3	1	1	4
Run into roadway	4	49	12	6	2	3
Cross through traffic	-	9	7	7	4	8
Other	2	7	5	1	9	3
Totals	18	107	46	47	31	38
% Involved Pedestrians with Unsafe Action (Excluding "other")	93.8	97.0	68.3	47.8	40.9	54.3

NOTE: Seven pedestrian ages not stated.

35 - 44	45 - 54	55 - 64	65 - 74	75 +	Total	(%)	Pedestrian Action
11	5	6	6	7	75	(18.8)	Crossing intersection with right-of-way
4	3	5	4	3	46	(11.5)	Crossing intersection without right-of-way
1	2	1	1	-	15	(3.8)	Crossing intersection - no control
-	2	-	-	-	4	(1.0)	Walk with traffic
1	1	-	-	-	9	(2.3)	Walk against traffic
-	1	1	1	1	17	(4.3)	On sidewalk or shoulder
-	2	-	-	-	11	(2.8)	Play/work on highway
-	-	-	1	-	42	(10.5)	Come from behind parked car
-	1	2	1	2	82	(20.6)	Run into roadway
4	2	5	9	6	61	(15.3)	Cross through traffic
5	2	2	1	-	37	(9.3)	Other
26	21	22	24	19	399	(100.0)	Totals
38.1	52.6	60.0	65.2	57.9	68.0		% Involved Pedestrians with Unsafe Action (Excluding "other")

IN GENERAL, THE INSTANCES OF UNSAFE PEDESTRIAN ACTIONS WERE HIGHER FOR AGE GROUPS UNDER 10.

31% OF PEDESTRIANS INVOLVED IN COLLISIONS ENTERED THE ROADWAY UNEXPECTEDLY (CAME FROM BEHIND PARKED CARS OR RAN INTO THE ROADWAY).

Exhibit 4-3

PEDESTRIAN AGE VS ACTION AT TRAFFIC SIGNALS

Pedestrian Action	0 - 4 Years	5 - 9 Years	10 - 14 Years	15 - 19 Years	20 - 24 Years	25 - 34 Years
Crossing Intersection with Right-of-Way	-	-	4	11	4	6
Crossing Intersection without Right-of-Way	-	7	3	5	1	-
On Sidewalk or Shoulder	-	-	1	2	2	-
Come From Behind Parked Car	1	-	-	-	-	-
Run Into Roadway	-	3	1	1	1	1
Cross Through Traffic	-	-	2	2	1	2
Other	-	2	-	-	3	1
Total	1	12	11	21	12	10
% Pedestrians Crossing or Walking with Right-of-Way (a)	0.0	0.0	36.3	61.9	66.7	66.7

NOTES: (a) Not including "Other"

(b) Pedestrian ages not stated.

35 - 44 Years	45 - 54 Years	55 - 64 Years	65 - 74 Years	75 + Years	Row Total	%	Pedestrian Action
8	4	3	5	6	51	(43.2)	Crossing Intersection with Right-of-Way
2	2	4	4	3	31	(26.3)	Crossing Intersection without Right-of-Way
-	1	-	1	-	7	(5.9)	On Sidewalk or Shoulder
-	-	-	-	-	1	(0.9)	Came From Behind Parked Car
-	-	-	-	-	7	(5.9)	Run Into Roadway
1	2	2	1	-	13	(11.0)	Cross Through Traffic
1	1	-	-	-	8	(6.8)	Other
12	10	9	11	9	118	(100.0)	Total
72.7	55.5	33.3	54.5	66.7	52.7		% Pedestrians Crossing or Walking with Right-of-Way (a)

PEDESTRIANS UNDER THE AGE OF 20 WERE MUCH MORE LIKELY TO BE INVOLVED IN A COLLISION WHILE CROSSING WITHOUT THE RIGHT-OF-WAY.

Exhibit 4-4

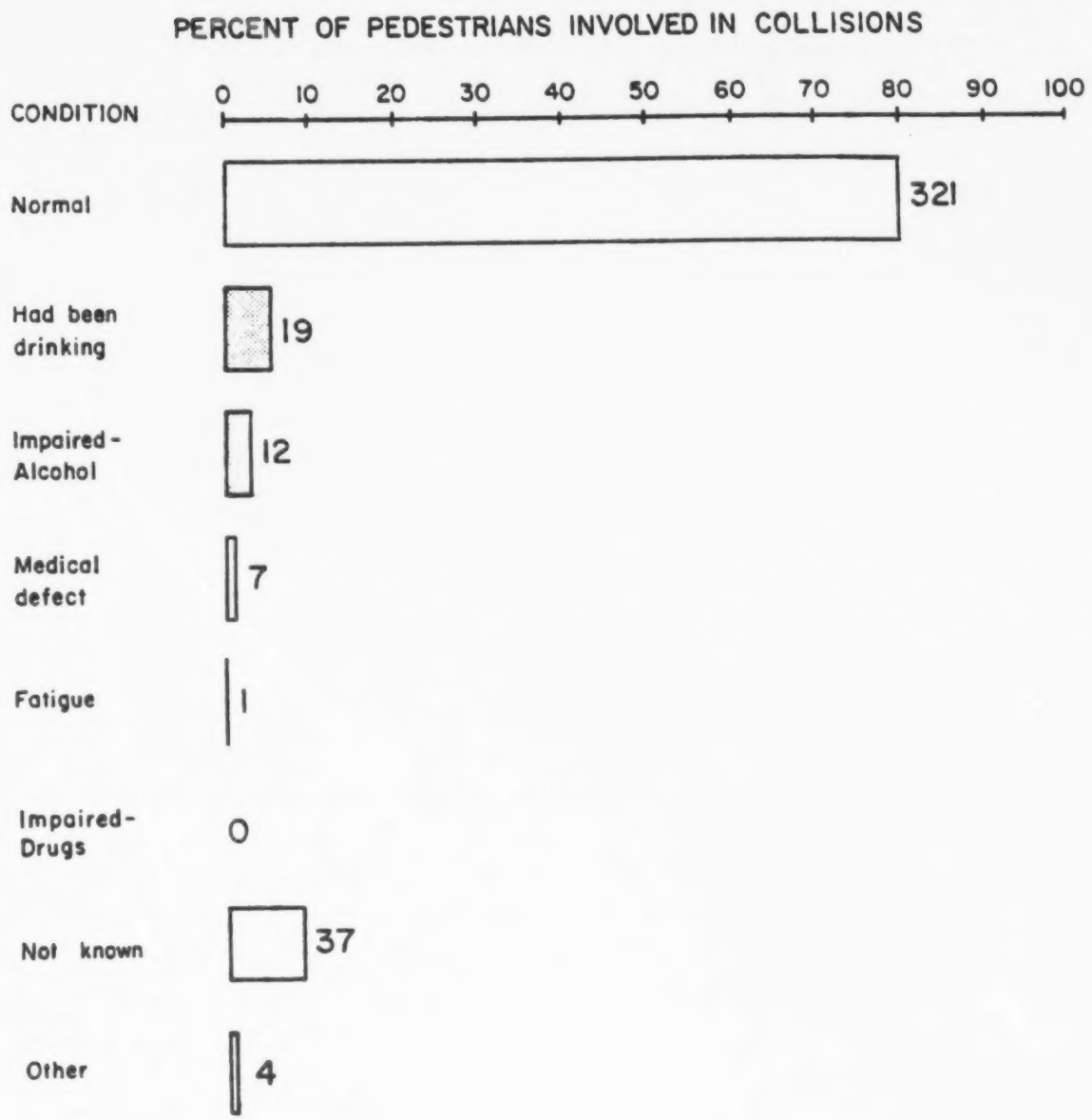
TIME OF DAY VS PEDESTRIAN AGE

Time of Day	0-4 Yrs	5-9 Yrs	10-14 Yrs	15-19 Yrs	20-24 Yrs	25-34 Yrs	35-44 Yrs	45-54 Yrs	55-64 Yrs	65-74 Yrs	75 + Yrs	Row Total
12 - 1 a.m.	-	-	1	2	3	1	-	-	1	-	-	7
1 - 2 a.m.	-	-	-	1	2	6	2	-	-	-	-	11
2 - 3 a.m.	-	-	-	1	1	1	1	1	-	-	-	3
3 - 4 a.m.	-	1	-	-	-	-	-	-	-	-	-	1
4 - 5 a.m.	-	-	-	-	-	-	-	-	-	-	-	-
5 - 6 a.m.	-	-	-	-	1	1	-	-	-	-	-	2
6 - 7 a.m.	-	-	-	-	1	1	-	3	-	-	-	5
7 - 8 a.m.	-	-	2	1	2	-	3	-	1	1	-	8
8 - 9 a.m.	-	5	5	3	3	3	1	-	-	-	-	20
9 - 10 a.m.	2	-	-	1	1	2	-	-	2	-	3	8
10 - 11 a.m.	1	1	-	2	-	1	1	1	2	2	1	8
11 - 12 noon	1	8	10	2	-	1	1	1	1	2	-	27
12 - 1 p.m.	2	11	3	2	1	-	3	-	-	3	1	26
1 - 2 p.m.	2	5	3	1	-	-	1	1	3	3	4	23
2 - 3 p.m.	2	5	4	2	-	1	2	1	1	3	-	19
3 - 4 p.m.	3	21	4	5	4	4	4	2	6	3	-	56
4 - 5 p.m.	4	25	8	3	3	6	-	-	3	-	2	54
5 - 6 p.m.	2	11	5	-	1	2	3	4	2	-	4	34
6 - 7 p.m.	3	7	1	3	-	1	1	3	-	-	1	20
7 - 8 p.m.	4	6	-	3	4	3	2	-	-	4	1	23
8 - 9 p.m.	1	1	2	6	3	3	-	-	-	2	-	18
9 - 10 p.m.	-	1	1	4	-	-	2	1	-	-	1	10
10 - 11 p.m.	-	-	-	4	-	1	-	2	-	-	1	8
11 - 12 a.m.	1	-	-	5	2	-	-	1	-	1	-	9
Total	18	107	46	47	31	38	26	21	22	24	19	399

36% OF PEDESTRIANS WERE INJURED IN COLLISIONS WHICH OCCURRED BETWEEN 3 P.M. AND 6 P.M.

NOTE: 7 pedestrian ages are not stated.

PEDESTRIAN CONDITION



8.5 PERCENT OF THE PEDESTRIANS INVOLVED IN COLLISIONS WERE IMPAIRED BY OR HAD BEEN DRINKING ALCOHOL.

Exhibit 4-6

PEDESTRIAN AGE VS TYPE OF TRAFFIC CONTROL

Type of Control	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 34	35 - 44
Traffic Signal	1	12	11	21	12	10	12
Stop Sign	3	13	7	7	4	7	5
Yield Sign	-	-	-	-	-	1	-
School Guard	-	4	-	-	-	-	-
School Bus	-	-	1	-	-	-	-
No Control	14	78	27	19	15	19	8
Other	-	-	-	-	-	1	1
Totals	18	107	46	47	31	38	26
% Pedestrian Collisions at Midblock or Other Locations With No Control	77.8	72.9	58.7	40.4	48.4	50.0	30.8

(a) 7 pedestrian ages not stated.

45 - 54	55 - 64	65 - 74	75 +	Totals	(%)	Type of Control
10	9	11	9	118	(29.5)	Traffic Signal
1	3	3	1	54	(13.5)	Stop Sign
-	-	-	-	1	(0.3)	Yield Sign
-	-	-	-	4	(1.0)	School Guard
-	-	-	-	1	(0.3)	School Bus
10	10	10	9	219	(54.9)	No Control
-	-	-	-	2	(0.5)	Other
21	22	24	19	399	(100.0)	Totals
47.6	45.5	41.7	47.4	54.9		% Pedestrian Collisions at Mid-Block or Other Locations With No Control

55% OF PEDESTRIAN COLLISIONS OCCURRED AT MID-BLOCK OR OTHER LOCATIONS WITH NO CONTROL.

FOR PEDESTRIANS UNDER 10 YEARS OF AGE 72% OR MORE WERE INVOLVED AT MID-BLOCK OR OTHER LOCATIONS WITH NO CONTROL.

Exhibit 4-7

DRIVER ACTION IN PEDESTRIAN COLLISIONS

Action	In Pedestrian Collisions	% Pedestrian Collisions
Driving Properly	258	66.8
Following Too Closely	-	-
Speed Too Fast	5	1.3
Improper Turn	3	0.8
Disobey Traffic Signal	8	1.6
Disobey Stop Sign	3	0.5
Fail to Yield Right-of-Way	37	9.7
Improper Passing	1	0.3
Wrong Way One-Way Street	-	-
Lost Control	3	0.8
Not Known	53	13.9
Other	21	4.5
Disobey Other Control	-	-
	392 (a)	100.0

66% OF THE MOTOR VEHICLE DRIVERS INVOLVED IN PEDESTRIAN COLLISIONS WERE RECORDED AS DRIVING PROPERLY.

THE MOST FREQUENTLY RECORDED IMPROPER DRIVER ACTION WAS FAILURE TO YIELD THE RIGHT-OF-WAY.

(a) Note - Pedestrian collisions involved more than one driver or vehicle in some cases. Data not available on driver action in several collisions.

Exhibit 4-8

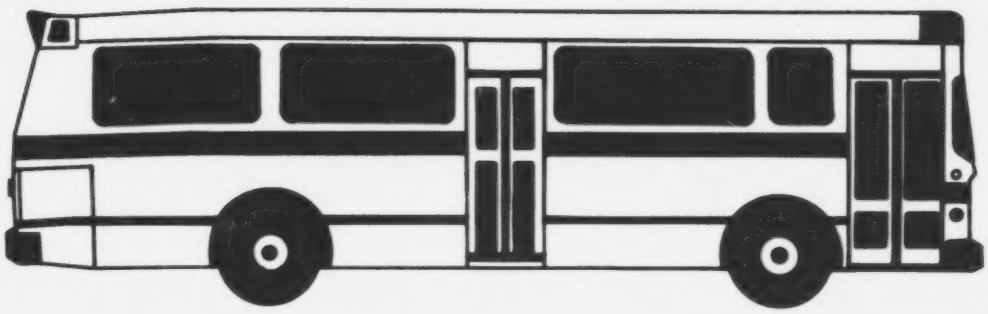
PEDESTRIAN AGE VERSUS INJURY STATUS

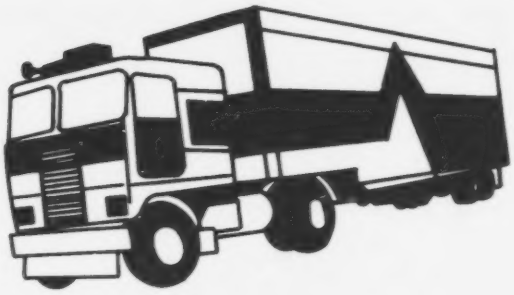
Pedestrian Age	Status of Inury				Total	% Major or Fatal Injury
	Minimal	Minor	Major	Fatal		
0 - 4	8	5	5	-	18	27.7
5 - 9	41	51	13	2	107	14.0
10 - 14	17	20	8	1	46	19.6
15 - 19	22	20	4	1	47	10.6
20 - 24	8	20	3	-	31	9.7
25 - 34	13	19	6	-	38	15.8
35 - 44	10	11	5	-	26	19.2
45 - 54	6	11	3	1	21	19.0
55 - 64	3	11	6	2	22	36.4
65 - 74	1	15	7	1	24	33.3
75 & Over	3	11	3	2	19	26.3
TOTAL	132	194	63	10	399	18.3
%	33.1	48.6	15.8	2.5	100.0	

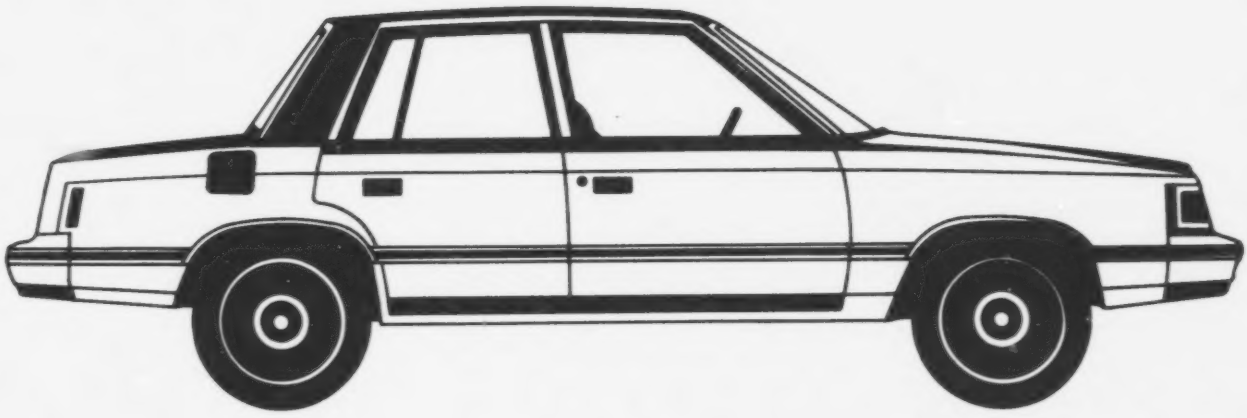
EIGHTY-ONE PERCENT OF PEDESTRIANS INVOLVED IN COLLISIONS SUFFERED ONLY MINIMAL OR MINOR INJURIES.

PEDESTRIANS UNDER 5 YEARS OF AGE OR OVER 54 YEARS OF AGE WERE MOST LIKELY TO SUFFER SERIOUS INJURY IN A COLLISION.

NOTE: 7 pedestrian ages not stated.







Chapter Five
Vehicles

Vehicle Type

For drivers involved in collisions, the percentage of drivers driving properly was higher than average for conventional and school bus drivers and drivers of trucks with trailer units (Exhibit 5-1). Caution should be exercised when interpreting this exhibit as there is no indication of vehicle exposure.

Vehicle Defects

Vehicle defects were recorded for 141 or approximately 1 percent of the vehicles involved in 1982 collisions (Exhibit 5-2). The most frequently recorded defect was a poor or ineffective vehicle braking system. Although a vehicle defect was recorded, it does not necessarily follow that the defect was the proximate cause of the collision.

Exhibit 5-1

DRIVER ACTION VS VEHICLE TYPE

Driver Action	Non-motor Vehicle	Passenger Car	Car and Trailer	Truck	Truck and Semi	Truck and Trailer
Driving Properly	96	5,228	5	764	55	17
Follow Too Close	4	829	2	145	13	1
Speed Too Fast	3	197	1	21	1	-
Improper Turn	16	543	1	95	22	1
Disobey Traffic Signal	10	282	-	26	5	-
Disobey Stop Sign	20	202	-	30	-	-
Fail to Yield R.O.W.	30	1,217	-	155	6	1
Improper Passing	3	75	-	18	1	1
Lost Control	15	712	1	107	2	-
Wrong Way on One-Way	13	19	-	2	-	-
Not Known	26	951	3	140	15	-
Other	27	816	1	172	24	1
Disobey Other Control	4	38	1	6	1	-
Totals	267	11,109	15	1,681	145	22
% Involved Drivers Driving Properly (a)	44.9	56.0	45.5	55.8	51.9	81.0

FOR DRIVERS INVOLVED IN COLLISIONS, THE PERCENTAGE OF DRIVERS DRIVING PROPERLY WAS HIGHER THAN AVERAGE FOR DRIVERS OF CONVENTIONAL-TYPE BUSES, SCHOOL BUSES, AND TRUCKS WITH TRAILER UNITS.

(a) Excluding "not known" and "other".

Motor-Cycle	Bus	School Bus	Other	Totals	(%)	Driver Action
125	102	8	4	6,404	(46.9)	Driving Properly
17	10	1	-	1,022	(7.5)	Follow Too Close
10	2	-	-	235	(1.7)	Speed Too Fast
7	11	-	-	696	(5.1)	Improper Turn
4	1	-	-	328	(2.4)	Disobey Traffic Signal
2	-	-	-	254	(1.9)	Disobey Stop Sign
8	8	1	-	1,426	(10.4)	Fail to Yield R.O.W.
3	1	-	-	102	(0.7)	Improper Passing
29	4	-	1	871	(6.4)	Lost Control
1	-	-	-	35	(0.3)	Wrong Way on One-Way
17	15	-	-	1,167	(8.5)	Not Known
8	12	-	1	1,062	(7.8)	Other
1	-	-	-	51	(0.4)	Disobey Other Control
232	166	10	6	13,650	(100.0)	Totals
(60.4)	(73.4)	(80.0)	(80.0)	(56.1)		% Involved Drivers Driving Properly (a)

Exhibit 5-2

VEHICLE DEFECTS

Defect Type	Non Motor Vehicle	Passenger Cars	Car and Trailer	Truck	Truck and Trailer	Truck and Semi	Motor-Cycle	Bus	School Bus	Other	Totals	%
Brakes	14	27	-	11	-	2	-	-	-	-	54	38.3
Steering	-	6	-	3	-	-	-	-	-	-	9	6.4
Tire Puncture or Blowout	-	13	-	2	-	-	1	-	-	-	16	11.3
Tire Tread Insufficient	-	14	-	2	-	-	1	-	-	-	17	12.1
Headlamps Defective	2	3	1	-	-	-	-	-	-	-	6	4.3
Other Lamps or Reflectors Defective	3	5	-	2	-	-	1	-	-	1	12	8.5
Engine Control Defective	-	8	-	1	-	-	1	-	-	-	10	7.1
Wheels or Suspension Defective	-	2	-	2	-	-	-	-	-	-	4	2.8
Vision Obsured	-	5	-	-	-	-	-	-	-	-	5	3.5
Trailer Hitch Defective	-	2	-	3	3	-	-	-	-	-	8	5.7
Totals	19	85	1	26	3	2	4	-	-	1	141	100.0
Defective Vehicles as a % of all vehicles of the same type involved in collisions (a)												

DEFECTIVE BRAKES ACCOUNTED FOR 38.3% OF THE RECORDED DEFECTS.

(a) Does not include parked vehicles.

Chapter Six
Environment

Light Conditions

Exhibit 6-1 indicates that most collisions occurred under clear visibility conditions. Although poor light conditions can make driving difficult, collisions under these conditions are probably associated with drivers failing to adjust properly to changed conditions, particularly those associated with the roadway surface. Exhibit 6-2 indicates that 65 percent of the collisions occurred under daylight conditions.

Road Surface

An estimated 59 percent of collisions occurred under dry pavement conditions (Exhibit 6-3). The estimate is based on the 72 percent of cases where two roadway surface conditions were indicated on the collision report form.

Pavement Markings

In accordance with Exhibit 6-4, an estimated 76 percent of collisions occurred on marked roadways where the markings were visible. Similar to the road surface analysis, this estimate is based on collisions which had road conditions and markings reported for two roadways. In over 82 percent of the cases where the road markings were recorded as not visible or obscured, snow, slush, or ice conditions were also reported. It is important to note that pavement markings that are not visible to the driver are not necessarily associated with collision cause. Further analysis would be necessary to indicate whether or not there was a causal relationship.

Road Character

Exhibit 6-5 indicates that an estimated 64 percent of collisions were referenced to the intersection of two, two-way roadways. There is no normalizing data available at this time which would serve to indicate that one type of road character was less prone to collision involvement than another.

As estimated 84 percent of collisions were related to the intersection of two straight and level roadways where two roadways were reported on the collision report (Exhibit 6-6). Again, because exposure data and causation are not implied by the exhibit, caution should be exercised when interpreting this information.

Road Location and Traffic Control

Exhibit 6-7 indicates that the greatest number of collisions occurred at non-intersection locations. If the intersection-related and in-intersection categories are combined, there were a greater number of collisions directly or indirectly related to intersections. As the exposure to vehicle conflicts is inherently greater at intersection locations, this result is not unexpected. Exhibit 6-8 indicates that collisions occurring at signalized intersections have a slightly higher chance of resulting in serious injury than do collisions occurring at stop- or yield-controlled intersections, or locations with no control.

Exhibit 6-9 indicates that the measured point of impact of over one-half of all collisions was within 9 metres of the curb lines of an intersection. Twenty-two percent of collisions occurred at signalized intersections, and 13% of collisions occurred at intersections with no formal control.

Road Condition

An estimated 98 percent of roads were in good condition at the time of the collision (Exhibit 6-10). Although some roadways were under construction or under repair in the vicinity of the collision, this does not directly imply that road condition was a contributing cause of the collision.

Fixed Objects

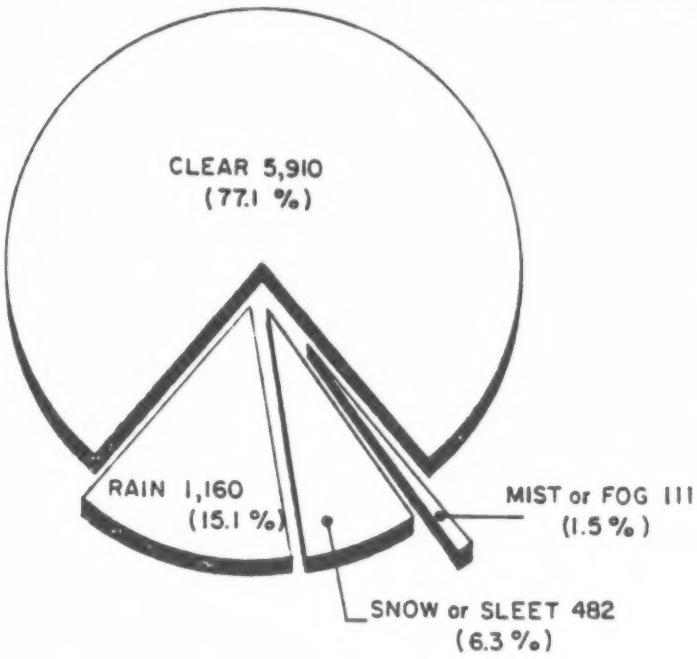
There were 1,143 recorded cases where vehicles struck fixed objects by the roadside (Exhibit 6-11). Thirty percent of the fixed objects struck by vehicles were rigid poles. In 79% of all fixed object collisions, a single motor vehicle left the roadway and struck a roadside object as its primary impact. In the remaining cases (21%), it would appear that the fixed object was struck after impact with another vehicle or pedestrian.

The chances of injury or death occurring were higher in collisions involving two or more vehicles in which a fixed object was struck than in single motor vehicle fixed object collisions. This may reflect the different nature of the types of collisions.

Nine collisions in which a fixed object was struck resulted in fatalities. This frequency is approximately three times the rate of occurrence of fatalities in collisions in which no fixed object was involved.

Exhibit 6-1

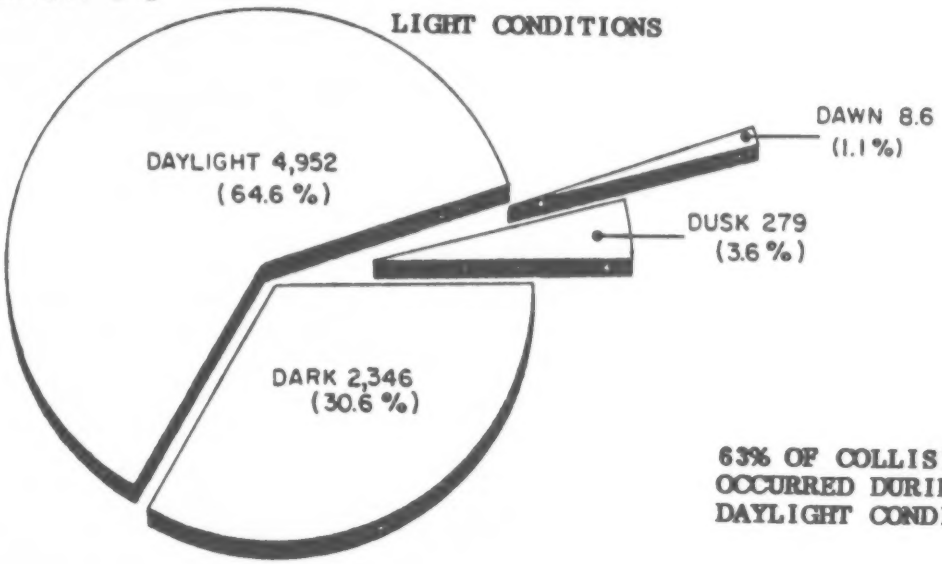
VISIBILITY CONDITIONS



78% OF COLLISIONS OCCURRED DURING CLEAR VISIBILITY CONDITIONS

Exhibit 6-2

LIGHT CONDITIONS



63% OF COLLISIONS OCCURRED DURING DAYLIGHT CONDITIONS

Exhibit 6-3

ROAD SURFACE CONDITIONS

ROAD 1 \ ROAD 2	DRY	WET	SNOW SLUSH ICE	GRAVEL MUD
DRY	3273			
WET	11	1560		
SNOW SLUSH ICE	23	44	577	
MUD GRAVEL	7	1	0	7

AN ESTIMATED (a) 62% OF COLLISIONS OCCURRED UNDER DRY PAVEMENT CONDITIONS.

Exhibit 6-4

ROAD 1 PAVEMENT MARKINGS VERSUS ROAD SURFACE CONDITIONS

SURFACE \ MARKINGS	GOOD	FAIR	NOT VISIBLE OBSCURED	NONE
DRY	3588	121	32	803
WET	1797	106	82	217
SNOW SLUSH ICE	199	23	527	147
MUD GRAVEL	5	1	2	13

AN ESTIMATED 80% OF COLLISIONS OCCURRED ON MARKED ROADWAYS WHERE THE MARKINGS WERE VISIBLE.

(a) IN 15% OF THE CASES, ROAD 2 INFORMATION WAS NOT RELEVANT AND WAS NOT RECORDED.

Exhibit 6-5

ROAD CHARACTER

ROAD 2 \ ROAD 1	ONE-WAY UNDIVIDED	TWO-WAY UNDIVIDED	DIVIDED BARRIER	DIVIDED	TRANSFER LANES RAMPS
ONE-WAY UNDIVIDED	789				
TWO-WAY UNDIVIDED	663	3524			
DIVIDED BARRIER	26	90	77		
DIVIDED	61	148	1	109	
TRANSFER LANES RAMPS	0	9	2	2	1

AN ESTIMATED (a) 66% OF COLLISIONS OCCURRED AT THE INTERSECTIONS OF TWO-WAY UNDIVIDED ROADWAYS.

Exhibit 6-6

ROAD ALIGNMENT

ROAD 2 \ ROAD 1	STRAIGHT & LEVEL	STRAIGHT ON HILL	CURVE ON LEVEL	CURVE ON HILL
STRAIGHT & LEVEL	4640			
STRAIGHT ON HILL	285	188		
CURVE ON LEVEL	159	17	60	
CURVE ON HILL	64	26	12	43

AN ESTIMATED (a) 82% OF COLLISIONS OCCURRED ON STRAIGHT AND LEVEL ROADWAYS.

(a) IN 15% OF CASES, ROAD 2 INFORMATION WAS NOT RELEVANT AND WAS NOT RECORDED.

Exhibit 6-3

ROAD SURFACE CONDITIONS

ROAD 1 \ ROAD 2	DRY	WET	SNOW SLUSH ICE	GRAVEL MUD
DRY	3273			
WET	11	1560		
SNOW SLUSH ICE	23	44	577	
MUD GRAVEL	7	1	0	7

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MUD GRAVEL	5	1	2	13

AN ESTIMATED 80% OF COLLISIONS OCCURRED ON MARKED ROADWAYS WHERE THE MARKINGS WERE VISIBLE.

(a) IN 15% OF THE CASES, ROAD 2 INFORMATION WAS NOT RELEVANT AND WAS NOT RECORDED.

Exhibit 6-5

ROAD CHARACTER

ROAD 2 \ ROAD 1	ONE-WAY UNDIVIDED	TWO-WAY UNDIVIDED	DIVIDED BARRIER	DIVIDED	TRANSFER LANES RAMPS
ONE-WAY UNDIVIDED	789				
TWO-WAY UNDIVIDED	663	3524			
DIVIDED BARRIER	26	90	77		
DIVIDED	61	148	1	109	
TRANSFER LANES RAMPS	0	9	2	2	1

AN ESTIMATED (a) 66% OF COLLISIONS OCCURRED AT THE INTERSECTIONS OF TWO-WAY UNDIVIDED ROADWAYS.

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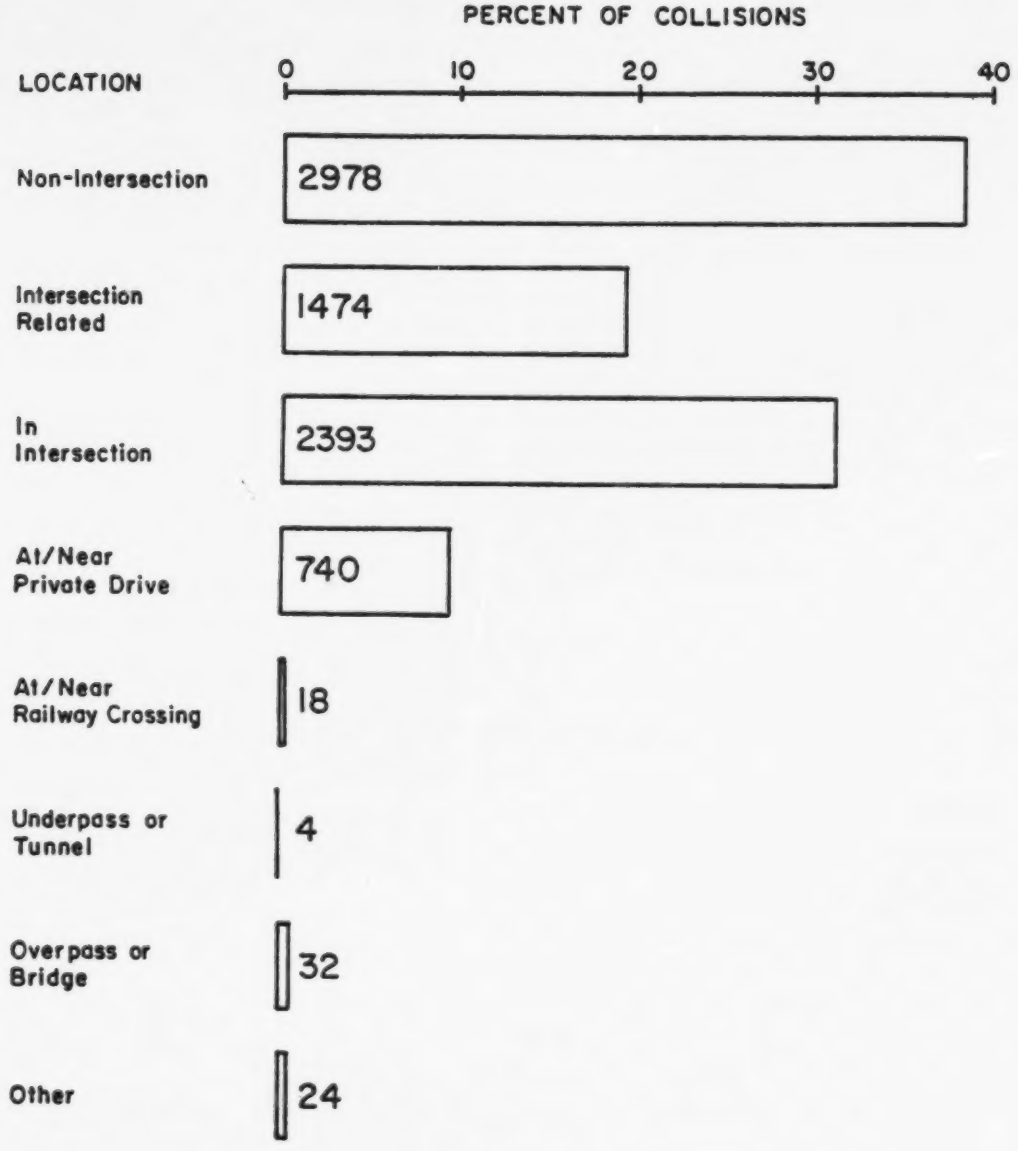
AN ESTIMATED (a) 82% OF COLLISIONS OCCURRED ON STRAIGHT AND LEVEL ROADWAYS.

(a) IN 15% OF CASES, ROAD 2 INFORMATION WAS NOT RELEVANT AND WAS NOT RECORDED.

Exhibit 6-7

LOCATION OF COLLISIONS



48% OF COLLISIONS OCCURRED AT NON-INTERSECTION LOCATIONS

Exhibit 6-8

TRAFFIC CONTROL VS CLASS OF COLLISION

Traffic Control	Fatal Injury	Non-Fatal Injury	Property Damage Only	Totals	(%) Fatal or Injury Collisions
Traffic Signal	3	852	1,113	1,968	(43.5)
Stop Sign	8	615	890	1,513	(41.2)
Yield Sign	-	20	35	55	(36.4)
Police Control	-	3	5	8	(37.5)
School Guard	-	4	2	6	(66.7)
School Bus	-	3	4	7	(42.9)
No Control	12	1,434	2,635	4,081	(35.4)
Other	-	8	17	25	(32.0)
Totals	23	2,939	4,701	7,663	(38.7)

COLLISIONS OCCURRING AT SIGNALIZED INTERSECTIONS HAVE A SLIGHTLY HIGHER CHANCE OF RESULTING IN SERIOUS INJURY THAN DO COLLISIONS OCCURRING AT STOP- OR YIELD-CONTROLLED INTERSECTIONS, OR INTERSECTIONS WITH NO CONTROL.

Exhibit 6-9

TRAFFIC CONTROL VS ROAD LOCATION

Distance From Intersection	Traffic Signal	Stop Sign	Yield Sign	Police Control	School Guard	School Bus	No Control	Other	Total	%
In Intersection (Within 9 Metres)	1,571	1,334	38	3	5	1	892	8	3,852	50.3
9.1 to 20 Metres	185	71	5	2	-	1	606	1	871	11.4
20.1 to 40 Metres	118	43	2	1	-	3	797	5	969	12.6
40.1 to 60 Metres	39	22	3	-	-	-	403	3	470	6.1
Over 60 Metres	55	43	7	2	1	2	1,383	8	1,501	19.6
	1,968	1,513	55	8	6	7	4,081	25	7,663	100.0

62% OF ALL COLLISIONS OCCUR WITH 20 METRES OF AN INTERSECTION.

21% OF ALL COLLISIONS OCCUR WITHIN SIGNALIZED INTERSECTIONS.

ROAD CONDITION

ROAD 2 \ ROAD 1	GOOD	UNDER REPAIR	UNDER CONSTRUCTION	OTHER
GOOD	5384			
UNDER REPAIR	17	7		
UNDER CONSTRUCTION	26	0	16	
OTHER	11	0	0	42

AN ESTIMATED (a) 98% OF ROADWAYS WERE IN GOOD CONDITION (I.E. NOT UNDER REPAIR OR UNDER CONSTRUCTION AT THE TIME OF THE COLLISION)

(a) IN 15% OF THE CASES, ROAD 2 INFORMATION WAS NOT RELEVANT AND WAS NOT RECORDED.

Exhibit 6-11

FIXED OBJECTS STRUCK VERSUS ROAD LOCATION

Object Struck	ROAD LOCATION Non-Intersection	Intesection Related	In Intersection	Private Drive	Railroad Crossing	Underpass or Tunnel	Overpass or Bridge	Other	Total	(%)	% Single Motor Vehicle
Restraining Barrier	54	12	3	1	-	-	1	1	72	(6.3)	80.6
Rigid Pole	197	63	66	16	2	-	1	3	348	(30.5)	78.7
Break-away Pole	49	17	11	4	1	-	-	-	82	(7.2)	86.6
Tree	59	15	16	8	-	-	-	-	98	(8.6)	80.6
Post (Sign; Parking Meter)	23	11	12	5	-	-	1	1	53	(4.6)	73.6
Fence	26	7	9	7	-	-	2	-	51	(4.5)	74.5
Culvert	11	1	-	4	-	-	1	-	17	(1.5)	100.0
Bridge Support	10	-	-	-	-	1	3	-	14	(1.2)	100.0
Rock Face	9	1	-	-	1	-	-	-	11	(1.0)	100.0
Snowbank or Drift	15	2	2	3	-	-	-	-	22	(1.9)	72.7
Ditch	92	12	13	5	-	-	1	2	125	(10.9)	92.8
Curb	49	14	21	7	-	-	3	1	95	(8.3)	65.3
Crash Cushion	5	-	1	-	-	-	-	-	6	(0.5)	83.3
Building or Wall	24	13	17	8	-	-	1	1	64	(5.6)	56.3
Other	53	16	8	6	-	-	2	-	85	(7.4)	78.8
Total	676	184	179	74	4	1	16	9	1,143	(100.0)	79.3

30% OF FIXED OBJECTS STRUCK BY ALL VEHICLES WERE RIGID POLES.
79% OF COLLISIONS WITH FIXED OBJECTS WERE SINGLE MOTOR VEHICLE COLLISIONS.

Exhibit 6-12

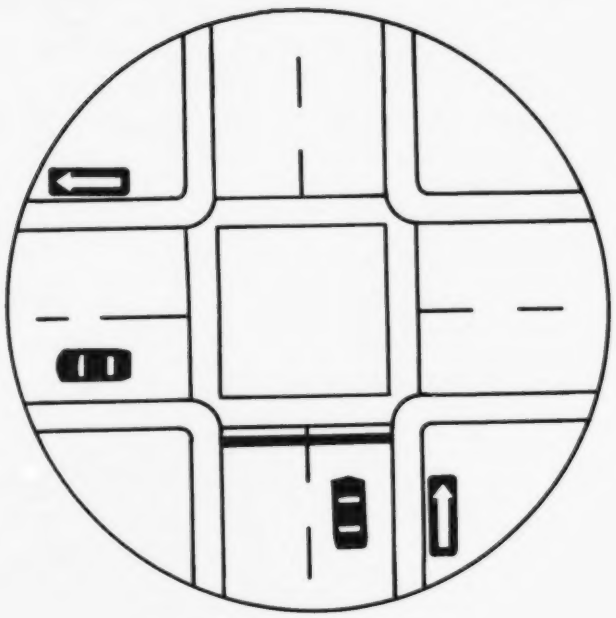
FIXED OBJECT VERSUS CLASS OF COLLISION

Object Struck	Fatal	Personal Injury	Property Damage Only	Total	% Fatal or Injury
Restraining Barrier	-	17	55	72	23.6
Rigid Pole	3	157	188	348	46.0
Breakaway Pole	-	32	50	82	39.0
Tree	-	48	50	98	49.0
Post, Sign, Parking Meter	1	12	40	53	24.5
Fence	1	14	36	51	29.4
Culvert	-	8	9	17	47.1
Bridge Support	1	10	3	14	78.6
Rock Face	-	6	5	11	54.5
Snowbank or Drift	-	9	13	22	40.9
Ditch	1	63	61	125	51.2
Curb	-	40	55	95	42.1
Crash Cushion	-	2	4	6	33.3
Building or Wall	2	25	37	64	42.2
Other	-	27	58	85	31.8
Total	9	470	664	1,143	41.9
Single Motor Vehicle Collisions	5 (0.6%)	359 (39.6%)	542 (59.8%)	906 (100.0%)	
Collisions Involving Two or More Vehicles	4 (1.7%)	111 (46.8%)	122 (51.5%)	237 (100.0%)	

THE PROBABILITY OF INJURY OR DEATH ARE HIGHEST IN COLLISIONS IN WHICH A RIGID POLE, BRIDGE SUPPORT, CULVERT, DITCH, TREE OR ROCK FACE ARE HIT.

THE CHANCE OF INJURY OR DEATH IN A COLLISION IN WHICH A FIXED OBJECT IS HIT IS HIGHER WHEN TWO OR MORE VEHICLES ARE INVOLVED.

FIVE SINGLE MOTOR VEHICLE COLLISIONS IN WHICH FIXED OBJECTS WERE STRUCK WERE FATAL.



Chapter Seven
Locations

General

Locations that have high numbers or rates of collision occurrences have received regular attention by roadway authorities in the Region and countermeasures are constantly being implemented on existing facilities and incorporated into the design of new facilities. However, physical alterations are not effective in preventing the majority of traffic collisions as these are the direct result of driver or pedestrian error.

Area Municipality

In general, the collision rate increased with increasing municipality size (Exhibit 7-1).

High Frequency Locations

Exhibit 7-2 represents a list of the 62 locations which experienced the highest number of collision occurrences in 1982. All 1982 collisions occurring at traffic signals were subjected to the control chart analysis technique (Exhibit 7-3). Additional information including collision data from previous years is included with this exhibit.

Exhibit 7-4 shows the relative number of collisions and collision rates for selected groups of signalized intersections.

These exhibits do not necessarily represent priority lists for improvements as other factors have to be taken into account such as cost-benefit considerations or the deployment of other countermeasure opportunities which may be more cost-effective.

In many cases, these locations are already under consideration for various forms of improvement on a priority basis.

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HAMILTON, ONTARIO

Exhibit 7-1 **COLLISIONS VS AREA MUNICIPALITY**

Municipality	Class of Collision (a) Fatal	Non-Fatal Injury	Property Damage Only	All Collisions	1982 Collision Rate per 1,000 Pop. (b)
Ancaster	-	59	118	177	12.5
Dundas	-	87	194	281	14.6
Flamborough	3	117	162	282	11.7
Glanbrook	-	56	61	117	11.8
City of Hamilton	17	2,358	3,803	6,175	20.1
Stoney Creek	3	262	363	628	18.5
Total for the Regional Municipality of Hamilton-Wentworth	23	2,939	4,701	7,663	18.8

COLLISION RATE IN TERMS OF COLLISIONS PER 1,000 POPULATION GENERALLY INCREASED WITH INCREASED MUNICIPALITY SIZE.

(a) Collisions reported to the Hamilton-Wentworth Regional Police only; areas patrolled by the Provincial Police (e.g. Kings Highways) are not included.

(b) 1979 population figures used.

Exhibit 7-2

INTERSECTIONS WITH HIGHEST NUMBER OF COLLISIONS IN 1982 (a)

	Intersection	Type of Traffic Control	Number of Collisions	5 Yr. Avg.
1.	Main/Victoria	Traffic Signal	23	25.2
2.	Mohawk/Paradise	Traffic Signal	20	14.0
3.	Barton/Woodward	Traffic Signal	18	17.0
4.	Main/Dundurn	Traffic Signal	17	17.8
5.	Main/John	Traffic Signal	17	19.8
6.	Burlington/Parkdale	Traffic Signal	16	15.8
7.	Charlton/Sherman Access	Traffic Signal	16	14.4
8.	Queenston/Centennial	Traffic Signal	16	23.8
9.	Mohawk/James	Traffic Signal	15	14.2
10.	Queenston/Nash	Traffic Signal	15	19.4
11.	York/Locke	Traffic Signal	15	10.8
12.	Aberdeen/Dundurn	Traffic Signal	14	11.6
13.	Cannon/Gage	Traffic Signal	14	11.0
14.	King/Centennial	Traffic Signal	14	16.0
15.	Main/Kenilworth	Traffic Signal	14	10.8
16.	Melvin/Parkdale	Traffic Signal	14	10.6
17.	Rymal/James	Traffic Signal	14	11.2
18.	Wilson/Hughson	Traffic Signal (b)	14	10.0
19.	Aberdeen/Queen	Traffic Signal	13	10.6
20.	Barton/Centennial	Traffic Signal	13	18.8
21.	Fennell/Gage	Traffic Signal	13	18.2
22.	King/James	Traffic Signal	13	11.4

	Intersection	Type of Traffic Control	Number of Collisions	5 Yr. Avg.
23.	Mohawk/Wentworth	Traffic Signal	13	9.0
24.	Barton/Birch	Traffic Signal	12	8.6
25.	Barton/Wellington	Traffic Signal	12	8.0
26.	Fennell/Wellington	Traffic Signal	12	9.0
27.	King/Queen	Traffic Signal	12	11.2
28.	Main/Wellington	Traffic Signal	12	15.4
29.	Cannon/Barnesdale	2-Way Stop	11	6.6
30.	Cannon/Ottawa	Traffic Signal	11	12.4
31.	Fennell/Sherman	Traffic Signal	11	16.6
32.	King/Gage	Traffic Signal	11	8.0
33.	King William/Hughson	1-Way Stop	11	7.0
34.	Main/Bay	Traffic Signal	11	11.2
35.	Main/Cootes/Leland	Traffic Signal	11	7.2
36.	Main/James	Traffic Signal	11	13.0
37.	York/Dundurn	Traffic Signal	11	13.2
38.	Barton/Robins	2-Way Stop	10	11.0
39.	Barton/Rosslyn	2-Way Stop	10	8.6
40.	Barton/Ottawa	Traffic Signal	10	13.0
41.	Fennell/Ottawa	Traffic Signal	10	13.8
42.	Fennell/Wentworth	Traffic Signal	10	10.2
43.	Govenors/Creighton	2-Way Stop	10	4.0
44.	King/Dundurn	Traffic Signal	10	14.6
45.	King/Parkdale	Traffic Signal	10	13.8
46.	Limeridge/James	Traffic Signal	10	11.4
47.	Roxborough/Parkdale	Traffic Signal	10	6.8

	Intersection	Type of Traffic Control	Number of Collisions	5 Yr. Avg.
48.	York/Queen	Traffic Signal	10	10.2
49.	Barton/Gage	Traffic Signal	9	15.2
50.	Barton/John	Traffic Signal	9	13.6
51.	Barton/Sherman	Traffic Signal	9	7.2
52.	Brampton/Parkdale	Traffic Signal	9	13.0
53.	Cannon/Hess	Traffic Signal	9	6.6
54.	Cannon/John	Traffic Signal	9	7.0
55.	Dunsmure/Kenilworth	2-Way Stop	9	13.4
56.	Fennell/James	Traffic Signal	9	9.2
57.	King/Victoria	Traffic Signal	9	14.4
58.	Main/Longwood	Traffic Signal	9	9.8
59.	Main/Parkdale	Traffic Signal	9	7.6
60.	Mohawk/Wellington	Traffic Signal	9	9.8
61.	Newlands/Kenilworth	2-Way Stop	9	4.8
62.	Wilson/James	Traffic Signal	9	5.6

(a) Only collisions occurring within 31 feet (9.5 m) of the intersection are defined as being "in" the intersection, and are included on this list.

(b) Signalized in 1982.

Exhibit 7-3

SIGNALIZED INTERSECTIONS WITH HIGHEST COLLISION RATES IN 1982 *

	Intersection	$\frac{R_1}{R_c}$	(a) R_1	(b) R_c	Number of Collisions 1982(c) AWDT	1982	1981	1980	1979	5 YR AVG.
1.	Charlton/Sherman Access	2.39	2.58	1.08	18,123	16	14	20	8	14.4
2.	Mohawk/Paradise	2.25	2.30	1.02	23,816	20	16	13	10	14.0
3.	King William/Catharine	2.22	2.81	1.27	7,600	7	3	3	2	4.2
4.	Aberdeen/Dundurn	1.66	1.71	1.03	20,028	14	13	12	7	11.6
5.	Main/Victoria	1.60	1.50	0.94	41,650	23	31	24	20	25.2
6.	Barton/Woodward	1.58	1.54	0.98	34,215	18	13	18	18	17.0
7.	Fennell/Gage	1.55	1.61	1.03	22,954	13	18	15	22	18.2
8.	Mohawk/Wentworth	1.47	1.50	1.02	30,746	13	5	9	8	9.0
9.	Greenhill/Mt. Albion	1.46	1.64	1.13	15,133	8	5	5	5	5.4
10.	Rymal/James	1.42	1.42	1.00	27,434	14	11	10	7	11.2
11.	Melvin/Parkdale	1.41	1.41	1.00	27,842	14	10	6	11	10.6
12.	Fennell/Wentworth	1.39	1.48	1.07	20,194	10	11	9	12	10.2
13.	Cannon/Gage	1.38	1.37	1.00	25,403	14	8	7	11	11.0
14.	Hunter/Hess	1.31	1.60	1.22	8,043	5	5	12	11	8.0
15.	Barton/Birch	1.30	1.31	1.01	27,707	12	9	8	10	8.6
16.	Barton/John	1.29	1.39	1.07	18,846	9	13	15	20	13.6
17.	Roxborough/Parkdale	1.28	1.34	1.05	18,867	10	6	6	6	6.8
18.	Fennell/Ottawa	1.28	1.34	1.05	21,286	10	15	14	17	13.8
19.	Limeridge/James	1.26	1.29	1.02	27,472	11	11	5	13	11.4
20.	Barton/Green	1.26	1.37	1.09	15,669	8	7	7	4	5.4
21.	Queenston/Nash	1.25	1.21	0.97	38,827	15	16	26	23	19.4
22.	Aberdeen/Queen	1.24	1.22	0.99	28,088	13	17	10	9	10.6

	Intersection	R_1 / R_c	(a) R_1	(b) R_c	1982(c) AWDT	Number of Collisions 1982	1981	1980	1979	5 YR AVG.
23.	Cannon/Ottawa	1.23	1.25	1.02	23,154	11	12	8	12	12.4
24.	York/Locke	1.22	1.17	0.96	36,296	15	15	8	10	10.8
25.	Barton/Wellington	1.22	1.23	1.00	28,596	12	6	6	7	8.0
26.	Fennell/Wellington	1.21	1.21	1.00	29,383	12	11	7	10	9.0
27.	Main/Parkdale	1.21	1.28	1.06	19,432	9	13	8	5	7.6
28.	Main/John	1.21	1.14	0.94	40,721	17	20	26	23	19.8
29.	Hunter/Caroline	1.19	1.48	1.25	8,074	4	1	5	3	3.3
30.	Fennell/Sherman	1.19	1.21	1.01	25,261	11	21	12	17	16.6
31.	King(North Branch)/James	1.19	1.17	0.98	35,501	13	9	15	10	11.4
32.	Barton/Bay	1.16	1.33	1.14	13,334	6	3	3	2	3.4
33.	King/Centennial	1.14	1.10	0.96	37,824	14	17	15	20	16.0
34.	Mohawk/James	1.11	1.05	0.95	45,485	15	18	11	15	14.2
35.	Cannon/Hess	1.10	1.14	1.04	21,382	9	7	6	6	6.6
36.	King(South Branch)/James	1.09	1.23	1.13	13,300	6	7	8	8	6.0
37.	Mohawk/Ottawa	1.09	1.16	1.06	20,148	8	12	15	15	12.2
38.	Cannon/John	1.08	1.12	1.04	21,085	9	6	11	4	7.0
39.	Brampton/Parkdale	1.08	1.12	1.03	21,860	9	10	12	22	13.0
40.	Queenston/Centennial	1.08	1.00	0.93	44,653	16	26	29	26	23.8
41.	Cootes/East (Dundas)	1.07	1.14	1.06	20,549	8	4	4	2	4.5
42.	King/Parkdale	1.06	1.07	1.01	25,964	10	11	9	19	13.8

	Intersection	$\frac{R_1}{R_c}$	(a) R_1	(b) R_c	1982(c) AWDT	Number of Collisions 1982	1981	1980	1979	5 YR AVG.
43.	Main/Dundurn	1.06	0.98	0.92	51,365	17	18	18	17	17.8
44.	Brant/Birch	1.04	1.27	1.22	7,240	4	0	2	3	2.2
45.	Barton/Sherman	1.04	1.07	1.03	24,803	9	7	5	7	7.2
46.	Hester/Wellington	1.03	1.26	1.21	9,447	4	1	5	0	2.0
47.	Burlington/Parkdale	1.02	0.94	0.92	52,704	16	14	23	16	15.8
48.	King/Queen	1.00	0.97	0.97	36,815	12	14	6	9	11.2
49.	Wilson/John	1.00	1.04	1.04	19,418	8	5	6	8	6.4
50.	King/Cochrane	1.00	1.04	1.04	24,144	8	10	8	7	7.0
51.	Lawrence/Rosedale	1.00	1.15	1.15	11,068	5	2	6	4	4.2

NOTES:

(a) R_1 is the number of collisions per million vehicles entering occurring within 31 feet of an individual intersection in 1982.

(b) R_c is a volume-adjusted critical rate. If R_1 exceeds R_c ($\frac{R_1}{R_c}$ is greater than 1.00), one can state with 95 percent confidence that the collision rate at the intersection in question is significantly higher than would normally be expected.

$$R_c = R_a + K\sqrt{\frac{R_a}{m}} - \frac{0.5}{m}$$

where R_a = systemwide average collision rate for all traffic signal locations (0.63 collisions per million vehicle entries in 1982).

K = constant = 1.65 (for 95% confidence level)

m = vehicle exposure at the location in million vehicles entering per year (AADT x 365)

(c) AWDT - Average Weekday Daily Traffic; AADT - Average Annual Daily Traffic.

(*) Note: Rates presented are for 1982 only. Rates may fluctuate significantly from year-to-year. Therefore, caution should be exercised when drawing conclusions from the above table.

Exhibit 7-4

OVERALL COLLISION RATES FOR SELECTED GROUPS OF SIGNALIZED INTERSECTIONS

Intersections Included	Data for 1982 Only		Data for 1978-1982	
	Avg. No. of Collisions Per Year	Rate (Collisions/ Million Vehicles Entering)	Avg. No. of Collisions Per Year	Rate (Collisions/ Million Vehicles Entering)
All intersections	5.27	0.63	6.37	0.77
Intersections of one-way streets with one-way streets	5.30	0.60	6.43	0.73
Intersections of one-way streets with two-way streets	4.42	0.53	5.31	0.64
Intersections of two-way streets with two-way streets	5.54	0.69	6.70	0.83
Central business district intersections	6.00	0.66	6.99	0.77
C.B.D. fringe or industrial intersections	4.92	0.60	5.96	0.73
Suburban shopping-type intersections	6.23	0.67	7.78	0.84
Residential area intersections	4.11	0.59	4.69	0.67
All lower city intersections	5.30	0.61	6.32	0.73
All mountain intersections	5.70	0.76	7.35	0.98

Appendix

Exhibit A-1

CAUSES OF DEATH 1980 (1)

Cause	Rate/100,000 Population Canada	Ontario
Diseases of the Heart and Circulatory Diseases	323.6	345.9
All Malignant Neoplasms	165.2	167.0
All Accidents and Adverse Effects (Including Late Effects)	65.7(2)	56.9 (2)
Respiratory Diseases (Excluding Infections and Parasitic Diseases)	46.7	46.5
Diabetes Mellitus	12.0	12.0
Chronic Liver Disease and Cirrhosis	11.2	11.3
Causes of Perinatal Mortality Excluding Stillbirths	6.9	6.2
Congenital Anomalies	6.7	6.1
All Other Causes Not Specified in the Above List	77.8	79.8
All Causes	715.8	731.7

NOTES: (1) From Statistics Canada, Vital Statistics, Volume III, Mortality, 1979 and 1980, p. 12-15.

(2) Motor Vehicle Collisions Alone - 22.5 for Canada, 17.8 for Ontario.

Exhibit A-2

ACCIDENTAL CAUSES OF DEATH 1980 (1)

Cause	Number		Death Rate/100,000	
	Canada	Ontario	Canada	Ontario
Traffic Accidents	5,397	1,527	22.5	17.8
Accidental Falls	1,848	663	7.7	7.7
Fires	747	229	3.1	2.7
Drowning	570	150	2.4	1.7
Other Transport	548	194	2.3	2.3
Accidental Poisoning	443	203	1.9	2.4
Suffocation	423	148	1.8	1.7
Motor Vehicle (non-traffic related)	144	57	0.6	0.6
Explosives, Acid, Electricity	117	37	0.5	0.4
Firearms	74	21	0.3	0.2
Lightning	8	3	0.1	0.1
All Other	908	262	3.8	3.1

(1) Statistics Canada, Vital Statistics, Volume III, Mortality, 1979 and 1980, p. 180-183.

Exhibit A-3

ACCIDENTAL CAUSES OF DEATH 1980 (14 YRS. OF AGE AND UNDER) (1)

Cause	Number of Fatalities In Canada
Traffic Accidents	559
Fires	187
Drowning	171
Suffocation	98
Other Transport	35
Accidental Falls	35
Firearms	21
Motor Vehicle (Non-Traffic Related)	21
Accidental Poisoning	12
Explosives, Acid, Electricity	9
Lightning	1
All Other	147

(1) Statistics Canada, Volume III, Mortality, 1979 and 1980, p. 104-106.

Exhibit A-4

POPULATION AND REGISTRATION

Year	Population	Motor Vehicle Registration (a)		Ratio: Motor Vehicle Registration to Population
	Hamilton	Ontario	Hamilton	
1950	n/a	1,104,080	47,043	
1951	201,296	1,205.098	50,648	0.25
1952	210,060	1,291,753	55,169	
1953	216,921	1,406,119	59,808	
1954	222,907	1,489,980	62,728 (b)	
1955	225,608	1,617,853	67,497	
1956	233,019	1,710,240	70,034 (b)	0.30
1957	243,097	1,793,499	72,156	
1958	251,256	1,868,922	75,763	
1959	258,576	1,973,737	80,365	
1960	263,750	2,062,484	82,823	
1961	266,707	2,126,270	85,667	0.32
1962	268,908	2,177,148	83,779	
1963	264,706	2,268,320	89,005	
1964	278,260	2,381,219	93,208	
1965	283,099	2,516,680	102,171	
1966	285,649	2,643,474	107,506	0.38
1967	291,536	2,736,366	107,521	
1968	293,397	2,869,588	116,452	
1969	296,875	2,953,789	116,135	
1970	298,755	3,047,599	114,760	
1971	303,177	3,209,862	120,727	0.39
1972	304,391	3,382,497	134,623 (b)	
1973	305,382	3,583,379	140,687	
1974	401,932 (e)	3,891,603	154,886 (d)	
1975	408,466 (e)	4,079,108	162,348 (d)(g)	
1976	409,331 (e)	4,089,954 (c)	162,780 (d)	0.52 (f)
1977	411,358 (e)	4,274,410 (c)	170,122 (d)	
1978	407,486 (e)	n/a	228,149 (h)	
1979	407,758 (e)	n/a	190,884 (h)	
1980	410,503 (e)	n/a	230,459 (h)	
1981	n/a	n/a	277,813 (h)	0.68 (j)

NOTES:

(a) Registration is for all vehicles including automobiles, station wagons and commercial vehicles. Sources of data, Hamilton Police Reports, R. L. Polk and Company, Statistics Canada and The Ministry of Transportation and Communications of Ontario.

(b) Data not available. Estimated from provincial value.

(c) Estimated by the Ministry of Transportation and Communications.

(d) Data estimated from provincial value for City of Hamilton only.

(e) Population for Regional Municipality of Hamilton-Wentworth.

(f) For City of Hamilton only.

(g) R. L. Polk estimate for Region of Hamilton-Wentworth for 1975 - 180,084.

(h) Ministry of Transportation and Communications estimate for Region based on licence sales only, for Regional Hamilton-Wentworth.

(j) For Regional Municipality of Hamilton-Wentworth.

Exhibit A-5

MOTOR VEHICLE ACCIDENT DEATHS AND RATES

YEAR	DEATHS Canada	Ontario	Hamilton	RATES/10,000 REGISTERED MOTOR VEHICLES Canada	Ontario	Hamilton
1931	1,316	574	31	10.96	10.21	
1932	1,120	497	20	10.05	9.35	
1933	955	416	22	8.82	8.00	
1934	1,115	528	27	9.82	9.74	
1935	1,224	571	16	10.42	10.12	
1936	1,316	564	23	10.61	9.56	
1937	1,642	774	39	12.37	12.41	
1938	1,545	677	33	11.08	10.12	
1939	1,584	682	35	11.01	9.99	n/a
1940	1,723	756	46	11.46	10.74	
1941	1,852	835	45	11.78	11.30	
1942	1,409	610	49	9.24	8.53	
1943	1,437	563	41	9.51	8.14	
1944	1,374	526	28	9.14	7.79	
1945	1,556	637	25	10.39	9.61	
1946	1,781	729	33	10.98	10.25	
1947	1,869	753	26	10.17	9.41	
1948	2,086	782	19	10.25	8.94	5.34
1949	2,265	873	29	9.89	9.00	n/a
1950	2,270	850	12	8.74	7.70	2.55
1951	2,686	991	26	9.36	8.22	5.13
1952	2,701	1,040	26	8.56	8.05	4.71
1953	2,906	1,082	17	8.47	7.69	2.84
1954	1,960 (a)	1,045	17	5.38 (a)	7.01	2.71
1955	2,084 (a)	1,111	15	5.28 (a)	6.87	2.22
1956	3,184	1,180	25	7.46	6.90	3.57
1957	3,260	1,279	25	7.25	7.13	3.46
1958	3,118	1,112	21	6.61	5.94	2.77
1959	3,231	1,187	18	6.44	6.01	2.24

Appendix

YEAR	DEATHS			RATES/10,000 REGISTERED MOTOR VEHICLES		
	Canada	Ontario	Hamilton	Canada	Ontario	Hamilton
1960	3,283	1,166	21	6.25	5.65	2.54
1961	3,426	1,286	19	6.21	6.05	2.22
1962	3,883	1,383	32	6.72	6.35	3.82
1963	4,210	1,421	27	6.93	6.26	3.03
1964	4,652	1,424	32	7.29	5.98	3.43
1965	4,902	1,611	27	7.31	6.40	2.64
1966	5,281	1,596	28	7.51	6.04	2.60
1967	5,429	1,719	39	7.26	6.28	3.63
1968	5,318	1,586	22	6.74	5.53	1.89
1969	5,425	1,683	19	6.57	5.70	1.64
1970	5,080	1,535	23	5.97	5.04	2.00
1971	5,573	1,769	23	6.17	5.51	1.91
1972	6,221	1,934	46	6.56	5.72	3.42
1973	6,706	1,959	23	6.60	5.47	1.63
1974 (b)	6,290	1,748	31	5.72	4.49	2.00
1975	6,061	1,800	26	5.29	4.41	1.60
1976		1,511	29		3.70	1.78
1977	n/a	1,420	34	n/a	3.27	2.00
1978		1,450	47		3.23	2.06
1979		1,560	42		3.36	2.20
1980		1,508	33		3.17	1.43
1981		1,445	31		2.86	1.16
1982			23			n/a

(a) Except Quebec.

(b) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

Exhibit A-6

HAMILTON/HAMILTON-WENTWORTH PEDESTRIAN INJURY RATES HISTORIC TRENDS

YEAR	PEDESTRIAN	
	Injuries Per 1,000 Population	Fatalities Per 100,000 Population
1951	1.41	7.45
1952	2.13	6.19
1953	2.14	4.14
1954	1.97	5.83
1955	2.29	3.10
1956	1.92	9.01
1957	2.16	6.17
1958	1.78	5.57
1959	1.76	5.03
1960	1.60	4.93
1961	1.96	4.12
1962	1.84	4.83
1963	2.11	5.67
1964	1.89	7.19
1965	2.05	6.00
1966	2.07	5.95
1967	1.89	5.83
1968	2.11	3.41
1969	2.03	2.02
1970	1.81	4.69
1971	1.84	4.29
1972	1.76	6.90
1973	1.87	2.95
1974 (a)	1.41	3.23
1975	1.28	2.69
1976	1.18	3.42
1977	1.22	2.43
1978	1.34	6.14
1979	1.14	3.68
1980	1.03	2.93
1981	1.13	2.50
1982	1.00	2.46

Note: See also Exhibit 1-2

(a) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

Exhibit A-7

TRENDS DATA
REGRESSION EQUATIONS

Statistic	Years	Equation (a)	Significant Slope at 95%	99% (b)	Range of Significant Slope at 95%
1. Collision Rate - All (c)	1951 - 1982	y = -0.144 x + 29.13	No	No	-0.364 to 0.077
2. Collision Rate - All (c)	1965 - 1982	y = -0.938 x + 34.92	Yes	Yes	-1.144 to -0.732
3. Injury Collision Rate	1954 - 1982	y = 0.107 x + 6.09	Yes	Yes	0.044 to 0.169
4. Injury Collision Rate	1965 - 1982	y = -0.122 x + 9.77	Yes	Yes	-0.188 to -0.056
5. Personal Injury Rate	1951 - 1982	y = 0.240 x + 6.14	Yes	Yes	0.163 to 0.317
6. Personal Injury Rate	1963 - 1982	y = -0.069 x + 12.87	No	No	-0.167 to 0.028
7. Pedestrian Injury Rate	1951 - 1982	y = -0.030 x + 2.21	Yes	Yes	-0.040 to -0.019
8. Fatality Rate - All Collisions	1951 - 1982	y = -0.059 x + 10.01	No	No	-0.156 to 0.038
9. Pedestrian Fatality Rate	1951 - 1982	y = -0.107 x + 6.48	Yes	Yes	-0.164 to -0.050

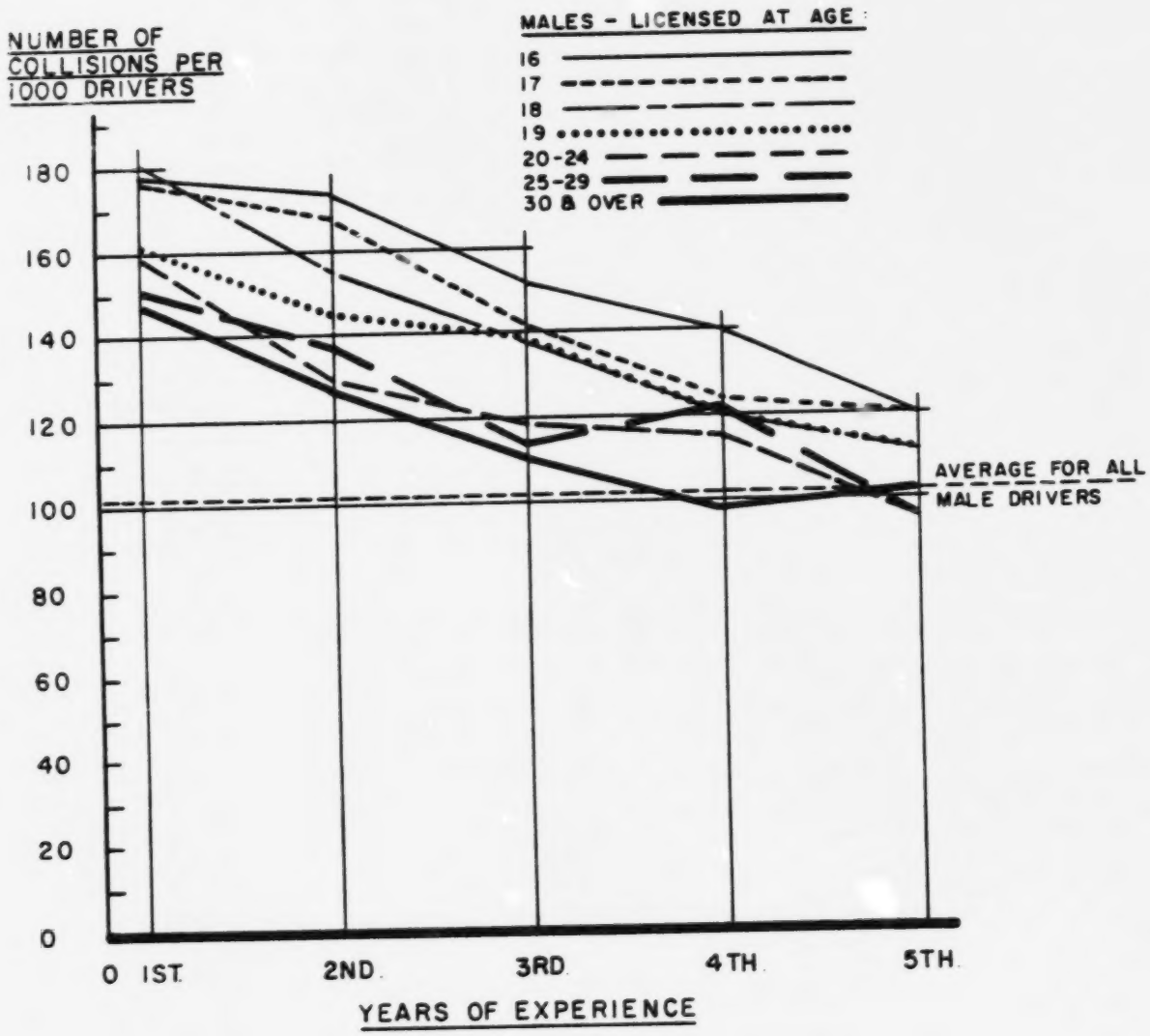
(a) The variable "x" represents the year; "y" the number of collisions expected.
"x" is 1.0 for the first year included in the equation.
"y" is in collisions per 1,000 population for 1 and 2; in injuries per 1,000 population for 3, 4 and 5; and in fatalities per 100,000 population in 6 and 7.

(b) If the slope of the regression line is significant, we can state with the indicated level of confidence that the slope is not equal to zero.

(c) Includes changes in reporting criteria and reporting area. For this reason, conclusions drawn from this regression line may not be entirely meaningful or appropriate.

APPENDIX A-8

EFFECT OF EXPERIENCE ON COLLISION INVOLVEMENT OF NEW DRIVERS



SOURCE - SYSTEMS RESEARCH & DEVELOPMENT,
ONTARIO MINISTRY OF TRANSPORTATION & COMMUNICATIONS

Exhibit A-9

COLLISION STATISTICS - SELECTED CANADIAN CITIES

City or Regional Municipality	Population	Property Damage Only - Collision Reporting Level	Collision Reporting Criteria (1) (a)	(b)	(c)	(d)	Other	Total Collisions	Collisions/ 1,000 Population	Injury Collisions	Injury Collisions/ 1,000 Population
Regional Hamilton-Wentworth	407,000 (1982)	$400.00	No	No	Yes	Yes	(f)	7,663	18.8	2,962	7.3
City of Hamilton	307,000 (1982)	$400.00	No	No	Yes	Yes	(f)	6,175	20.1	2,375	7.7
Edmonton	551,314 (1982)	$500.00	No	No	No	Yes		25,977	47.1	4,722	8.6
Halifax	114,594 (1981)	$500.00	Yes	Yes	Yes	Yes		4,826	42.1	542	4.7
London	266,319 (1982)	$400.00	No	Yes	Yes	Yes		8,292	31.2	1,952	7.3
City of Montreal (2)	1,020,900 (1981)	$250.00	No	No	Yes	Yes		26,585	26.1	7,041	6.9
Regional Ottawa-Carleton	561,444 (1982)	$400.00	No	No	No	Yes		14,233	25.4	3,852	6.9
Saskatoon	159,581 (1982)	$200.00	No	No	Yes	Yes		8,940	56.0	766	4.8
Metro Toronto	2,132,373 (1981)	$400.00	Yes	Yes	Yes	Yes	(e)	55,940	26.2	15,919	7.5
Vancouver	415,209 (1982)	$400.00	No	No	Yes	Yes		23,238	56.0	2,179	5.2
Windsor	192,546 (1982)	$400.00	Yes	Yes	Yes	Yes		4,167	21.6	1,583	8.2
Winnipeg	595,426 (1982)	$500.00	Yes	Yes	Yes	Yes		19,175	32.2	4,121	6.9
Burlington	113,158 (1982)	$400.00	No	No	No	Yes		1,800	15.9	581	5.1
Calgary	623,133 (1982)	$500.00	Yes	Yes	Yes	Yes	(f)	42,666	68.5	3,342	5.4
Regina (3)	164,313 (1981)	$200.00	No	No	No	Yes		8,673	52.8	1,371	8.3

(1) KEY TO CRITERIA FOR REPORTING COLLISIONS (See next page for definition of injury collisions)

- (a) Collisions reported involving an infraction of the Provincial Highway Traffic Act with property damage only and less than reporting level.
- (b) Collisions reported involving an infraction of the Criminal Code of Canada with property damage only and less than reporting level.
- (c) Hit and run collisions reported with property damage only and less than reporting level.
- (d) Collision reported if it involves any personal injury.
- (e) Public property damage collisions.
- (f) Collisions involving City or Regional government vehicles.

(2) Collision statistics quoted are for 1981. 1982 data not available.

(3) Only injuries requiring medical attention were classified as injury collisions.

DEFINITIONS OF "PERSONAL INJURY" (a)

Regional Hamilton-Wentworth	- any bodily harm, visible or complained of, that results from a motor vehicle collision.
City of Hamilton	- any bodily harm, visible or complained of, that results from a motor vehicle collision.
Edmonton	- includes minor abrasions and bruises, complaint of pain, caused by a motor vehicle collision.
Halifax	- injury or death (no stipulation regarding severity of injury) caused by a motor vehicle collision.
London	- any type of injury caused by a collision; need not be treated at a hospital.
City of Montreal	- any injury, apparent or not, to any person, caused directly or indirectly, by a motor vehicle.
Regional Ottawa-Carleton	- injury is any bodily harm visible or complaint of, caused by a motor vehicle collision.
Saskatoon	- any bodily harm, visible or complaint of, caused by a collision.
Metro Toronto	- injury must be reported when an injury occurs to any of the involved persons in a collision.
Vancouver	- up to descretion of driver or police if in attendance.
Windsor	- any injury resulting from a motor vehicle collision.
Winnipeg	- readily identifiable injury or perceived injury caused by a collision.
City of Burlington	- any bodily harm, visible or complained of, that results from a motor vehicle collision.
City of Calgary	- any type of injury resulting from a collision.
City of Regina	- any bodily harm, visible or complaint of, caused by the accident.

(a) definitions of a "personal injury" such that a collision involving a personal injury must be reported.

Exhibit A-10

FATAL COLLISION STATISTICS - CANADIAN AND U.S. CITIES (1)

CITY	# OF FATALITIES 1981	RATE PER 100,000 POPULATION	RATE PER 10,000 REGISTERED VEHICLES
HAMILTON (2)	**21**	**7.0**	**1.2**
AVERAGE OF ALL CANADIAN CITIES REPORTING TO N.S.C. (7 CITIES)	36.4	10.3	2.6
London, Ontario	12	6.2	1.6
Montreal, Quebec	90	7.4	2.2
Lethbridge, Alberta	4	10.9	2.4
Calgary, Alberta	53	16.0	3.6
Edmonton, Alberta	70	18.6	4.3
Medicine Hat, Alberta	5	19.9	4.4
AVERAGE OF ALL U.S. CITIES, POPULATION 200,000 - 350,000 REPORTING TO N.S.C. (27 CITIES)	38.9	14.5	2.2
Rochester, N.Y.	16	6.6	0.9
St. Paul, Minn.	19	7.2	1.0
Norfolk, Va.	22	7.8	1.8
Louisville, Ky.	28	8.8	1.1
Akron, Ohio	23	9.6	1.3
Oakland, Cal.	33	9.7	1.7
Newark, N.J.	32	10.2	2.1
Shreveport, La.	21	10.4	1.4
Richmond, Va	23	10.5	1.8
Anchorage, Alas.	22	10.9	1.2
Albuquerque, N.M.	35	11.9	1.7
Anaheim, Cal.	26	12.6	1.6
Baton Rouge, La.	40	12.9	2.8

CITY	# OF FATALITIES 1981	RATE PER 100,000 POPULATION	RATE PER 10,000 REGISTERED VEHICLES
Virginia Beach, Va.	32	13.1	3.2
Charlotte, N.C.	40	13.4	2.5
Colorado Springs, Colo.	30	14.5	1.9
St. Petersburg, Fla.	35	15.2	1.9
Austin, Tex.	52	16.3	3.1
Long Beach, Cal.	56	16.5	2.4
Birmingham, Ala.	50	17.8	2.4
Sacramento, Cal.	49	17.9	2.2
Corpus, Christi, Tex.	41	19.1	3.3
Mobile, Ala.	41	19.7	3.7
Wichita, Kans.	56	20.9	2.5
Tampa, Fla.	60	22.7	2.8
Tucson, Ariz.	81	24.4	3.7
Miami, Fla.	87	25.0	3.3

NOTE:

(1) SOURCE: Accident Facts, 1982 Edition, National Safety Council, 444 N. Michigan Avenue, Chicago, Ill. Please note statistics are for 1981 calendar year.

(2) Rate is for City of Hamilton only.

Ontario road deaths plunge dramatically

By BRUCE STEWART
Spectator Staff

TORONTO — The recession hasn't been all bad for Ontario — at least when it comes to the number of people killed in traffic accidents.

A dramatic 26 per cent reduction in the number of people killed in car and truck accidents in Ontario during the first 11 months of 1982 has been attributed partly to the recession.

However, a sharp rise in the number of motorcycle fatalities during the same period has taken the edge off the good news for ministry of transportation and communications officials.

The ministry says the number of drivers killed in car and truck accidents plunged by 27 per cent to 604 from 441 people in the same 11-month period in 1981, while the number of passengers killed dropped by 25 per cent to 272 from 158 people.

The number of pedestrian deaths fell by 26 per cent to 158 from 215 people. Bicycle deaths dropped from 40 to 39 people.

But there was an 8 per cent increase in the number of motorcyle drivers killed in the same period, with the number of deaths jumping to 101 from 93.

And there was a jump of more than 30 per cent in the number of motorcycle passengers killed in Ontario, with the number rising to 20 from 15 deaths.

Fred Cederberg, a ministry official, said the recession undoubtedly played a large role in the number of auto and truck accidents.

"People aren't driving as far and they can't afford accidents, so the risk factor is way down," he said. "People are simply staying at home."

Mr. Cederberg said the mild weather early in the winter may have also contributed to the reduction in the number of fatalities.

Wentworth North MLA Eric Cunningham says it is disturbing to note that motorcycle fatalities are increasing at a time when auto deaths are dropping dramatically.

Mr. Cunningham, Liberal transportation critic, says the province should bring in tougher licensing and testing regulations to save the lives of motorcyclists.

Mr. Cunningham said Ontario should insist that people take a comprehensive, authorized safety and handling course before being given a motorcycle licence.

And New Democrat MLA Mel Swart (Welland Thorold) says the current motorcycle test, which he describes as a joke, must be made much tougher.

Transportation Minister James Snow said that while he is extremely pleased about the drop in the number of motor vehicle accidents, he is looking at ways of reducing the number of motorcycle accidents.

A special one-day seminar will be held early next month to discuss ways improving motorcycle safety with a wide variety of interested groups, Mr. Snow said.

If people can demonstrate that a change would be beneficial, Mr. Snow said, he would be willing to implement it.

Studies have shown that many of the motorcycle accidents involve people who have only recently received their licence, he said.

Some people have suggested that first-year drivers be restricted to motorcycles with engines less than 500 cubic centimetres, Mr. Snow said, as new drivers seem to have problems handling powerful machines.

However, no decision has been made to implement that suggestion, he said.

Mr. Snow says it is hard to explain why there is such a large drop in the number of motor vehicle fatalities this year, although he noted his ministry has been making many safety improvements on the roads.

These include things like more turn lanes, paved shoulders, and the installation of median barriers.

The number of fatalities has generally been dropping since the use of seat belts was made mandatory in 1975, but there has never been such a dramatic drop before, he said.

Mr. Cunningham said that things such as the spot check program for drinking drivers and enforcement of seat belt legislation have helped to reduce the number of fatalities.

Mr. Swart (Welland Thorold) says the high number of accidents and fatalities involving motorcycles should prompt the province to take immediate action to upgrade its testing system.

Last year, there were 20 deaths in the Niagara Peninsula due to motorcycle-related accidents, he said.

Mr. Swart says the fact that new drivers have many times the number of accidents as experienced drivers shows the need for better training.

Mr. Swart says tougher testing procedures would force those seeking a licence to take a comprehensive safety and handling course before trying their examination.

"The testing system is a joke," he said. "The ministry official now sends the applicant around the block while he stands on the corner and watches."

Many American states have a surcharge on motorcycle licences in order to pay for safety training programs, he said.

"Government indifference to motorcycle safety has been responsible, at least partly, for the low contribution provided by motorcycle manufacturers to motorcycle rider training in Canada," he said.